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AN EXPLORATORY STUDY TO IDENTIFY CONCEPTS AND DETERMINE CONCEPT ATTAINMENT IN A HOME ECONOMICS EDUCATION COURSE

by

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CHAPTER I

INTRODUCTION TO THE STUDY

The responsibility for preparing potential teachers to become effective directors of learning is increasingly important today. Throughout the nation there is a strong and growing interest in the development of effective courses and curricula in all areas of learning, including teacher education. Tyler stated that "in planning the curriculum for any school or any field, it is necessary to decide on the types of elements which most effectively serve as threads to use in the organization."[1] When the "threads," or the major ideas of a course, are identified the course is given structure. Through such organization students may become aware of the major ideas in any subject they study.

These threads, or major ideas, are frequently referred to as concepts. Phenix has identified concepts as " . . . basic central ideas an understanding of which opens the door to an effective grasp of an entire field of knowledge."[2] Phenix further stated:

> These key ideas provide as it were a map whereby the whole scheme of a subject may be grasped and characteristic features of individual items of knowledge may for the first time be rightly interpreted.[3]

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[1] Ralph W. Tyler, Basic Principles of Curriculum and Instruction, p. 56.

[2] Philip H. Phenix, "Key Concepts and the Crisis in Learning," Teachers College Record, 58:140, December, 1956.

[3] Ibid.

The concept approach to learning is not new but the importance of the role concepts can play in planning for teaching is increasingly being recognized. The concept approach is not unique to any specific field. History, literature, and philosophy have basic concepts which are "the primary building blocks of understanding."[1] Other fields or disciplines, chemistry, mathematics, and biological sciences, have constant principles upon which a student can build detailed knowledge.

Effective identification of concepts by students can assist in meaningful learning in any course or field. When students and teachers identify and understand significant ideas in a body of knowledge the ability to apply principles, to build or develop depth and breadth, and to use knowledge effectively is made possible.

I. THE PROBLEM

The problem in this study was one of identification of basic concepts and students' attainment of these concepts during a segment of the professional education sequence in the senior year.

Statement of the Problem. The purposes in this study were (1) to identify basic concepts for a beginning course in home economics education and (2) to assess students' awareness of basic concepts and their ability to use concepts and related generalizations during and immediately following the student teaching experience.

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[1] O. C. Carmichael, "Improving the Quality of Graduate Education for Prospective College Teachers," Higher Education in an Age of Revolutions, p. 204.

Importance of the Study. Concepts are the tools of learning which enable the individual to adjust his behavior to situations. They are significant to learning because they provide a guide for thinking. With the great rate of expansion of knowledge, there is a need for knowledge to be organized if its value is to be appreciated and the use of knowledge made apparent. A systematic method of identifying, organizing, structuring, and unifying important subject matter content of professional education courses can serve as a valuable contribution to the effectiveness with which students gain knowledge and understanding and develop skills of thinking.

Bruner declared that "learning should not only take us somewhere; it should allow us later to go further more easily."[1] He said that learning a general idea which can "then be used as a basis for recognizing subsequent problems as special cases of the idea originally mastered"[2] is at the heart of the educational process. Teachers of professional education courses cannot anticipate all the "special cases" which will face students in later teaching-learning situations. There is a need, therefore, to prepare students in such a manner that they can recognize the relation of new situations to past experiences and transfer ideas or skills required to solve new problems.

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[1] Jerome S. Bruner, The Process of Education, p. 17

[2] Ibid.

Courses of study that provide opportunities for students to identify major concepts and to gain skill in arriving at valid and objective generalizations relating to these concepts can assist in valuable and meaningful ways in the process of preparing for teaching. Opportunities during professional education courses that guide students in the process of concept attainment can have application in subsequent experiences during student and in-service teaching.

II. THE SITUATION

Students enrolled in the home economics teaching major at Kansas State University take the following courses during the professional semester in their senior year:

Methods of Teaching Home Economics
Curriculum in Home Economics
Teaching Participation (Student Teaching)
Home Management

This professional semester plan was begun in the fall of 1962.

Each semester is divided into two units of eight weeks. One group of students is enrolled in Methods of Teaching Home Economics and Teaching Participation during the first eight-week period, the other group in Curriculum in Home Economics and Home Management. At the end of the eight-week period the groups interchange so that each student completes each of the above courses during the semester.

This study is concerned with only two courses in the professional semester, Methods of Teaching Home Economics and Teaching Participation.

Methods of Teaching Home Economics is a course in which students gain experience in the process of developing and organizing units and lessons in home economics for high school pupils.

Student teachers spend five weeks in an off-campus student teaching center gaining teaching experience in a classroom under the supervision of an experienced home economics teacher. They return to the university campus on selected Saturday mornings during the five-week period to participate in a seminar class which is a part of the Teaching Participation course. A college supervisor visits each student teacher three or more times during the five weeks she is in the off-campus center.

III. PROCEDURE

A review of literature guided the investigator in gaining an understanding of the nature and role of concepts and concept attainment, and provided a basis for the development of this study. Research concerning the use of concepts in education was investigated to give background and knowledge of previous studies.

The investigator observed the Methods of Teaching Home Economics class each of the four times it was taught during the school year 1962-63. During the last two periods of observation, records regarding problems for study, presentations by the teacher, and student participation were made.

During the 1962-63 school year the investigator served as a college supervisor of student teachers in Home Economics Education. The experimental group in this study consisted of the entire group of five student teachers assigned to the investigator during the second half of the spring semester of 1963 and for whom she served as college supervisor. An attempt was made by the assigner of student teachers to assign to the investigator a representative sample of student teachers based on information known about students at the time assignments were made.

A case history was compiled for each student in the assigned population. Two conferences were held with each student prior to the student teaching experience. After each conference the student teachers' stated objectives, questions, apprehensions, and outline of plans were recorded.

The investigator visited each student teacher three times at her off-campus center. During these observations teaching effectiveness and teaching improvement were evaluated on a previously developed rating scale (Appendix F). A conference in which the student teacher's experiences and observed teaching effectiveness were discussed was held with the student during each visit.

A paper and pencil test (Appendix A) was developed by the investigator to assess attainment of key concepts as taught in the Methods of Teaching Home Economics class. This test was administered at the close of the student teaching experience and served as the final written examination in the Methods of Teaching Home Economics course. The test was composed of three parts. Part I required the stating of a generalization about a key concept from the methods course. Part II allowed students to denote their belief about concepts as they indicated whether the written concept was complete and correct, incomplete and/or partly correct, or incorrect. Part III consisted of identification of true or false generalizations related to teaching techniques. Concepts and related test item numbers are presented in Appendix C.

The Lewis M. Terman Concept Mastery Test-Form T, hereafter referred to as CMT, was administered to the experimental group. The manual accompanying the CMT stated that this test is "a measure of ability to deal with abstract ideas at a high level."[1] Results of this test were used as one means of comparison in measuring students' attainment of concepts.

Assignments completed by students served as another means for evaluation.

IV. DEFINITIONS

Terms are defined for use in this study as follows:

Block Plan. A plan for student teaching which involves a unit of experience of five weeks during one semester of an academic year.

College Supervisor. The person who assumes responsibility for preparing the student for her student teaching experience, who helps her evaluate her teaching effectiveness and who functions as a coordinator for other aspects of the program.

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[1] Lewis M. Terman, Concept Mastery Test Manual, Form T, p. 3.

Concept. A mental image of something the person has experienced through his own sense organs. It is the combination of meaning or understanding, value or feeling, and symbols or language.

Generalization. A complete thought that expresses an underlying truth, is universal in nature, and usually indicates relationship between concepts.

Instruments. Research tools developed and/or used by the investigator.

Methods Course. A home economics education course at Kansas State University in which potential teachers gain experience in the process of developing and organizing units and lessons in home economics for high school pupils.

Off-Campus Student Teaching Experience. Student teaching done in a student teaching center in a public school system.

Professional Education Courses. Planned experiences dealing directly with the teaching-learning process and the teacher's responsibilities related to the guidance of that process.

Pupil. A high school girl.

Student. A college senior preparing to teach home economics.

Student Teacher. A student enrolled in a teacher education program in a college or university and who is gaining teaching experience in a classroom under the supervision of an experienced teacher.

Student Teaching Center. The school or classroom in which the student teacher gains teaching experience.

Supervising Teacher. The experienced teacher who guides the student during her student teaching experience.

In Chapter II will be found pertinent information relating to concepts, the attainment of concepts, their importance in the learning process, and a discussion of certain concepts germane to the home economics education course.

CHAPTER II

THE CONCEPT APPROACH TO LEARNING

Education has been defined by Woodruff as "a system for helping every person and all people together obtain as much satisfaction as possible in their lives."[1] The primary goal of education is to equip students to meet effectively new situations as they are encountered in life. Learning then becomes a means of preparing for the future. By recalling and applying major ideas and processes from previous experiences and learning, the problems in new situations may be met and solved successfully.

I. IDENTIFICATION OF CONCEPTS

Numerous definitions have been given for a concept. A review of research studies revealed that researchers showed both confliction and agreement in their identification of the term "concept."

Phenix defined concepts as basic central ideas which allow students to understand effectively an entire field of knowledge.[2] Havighurst's definition of concept reiterated Phenix's belief of the meaning of concepts: "A concept," Havighurst wrote, "is an idea which stands for a large number of particular sense perceptions, or which stands for a number of ideas of lesser degrees of abstraction."[1] Several researchers have identified a concept as a word or idea. Reed said a concept "is any word or idea that stands for any one of a group of things."[2] Burton stated that "a word or other symbol which stands for the common property of a number of objects or situations"[3] is a concept. Kendler and Karasik's proposed meaning for concepts was quite similar to definitions which stated that a concept is a word. They said: "A concept is a name applied to a group of things which possess one or more common attributes, though they may be quite different in other respects."[4]

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[1] Asahel D. Woodruff, Basic Concepts of Teaching, p. 15.

[2] Philip H. Phenix, "Key Concepts and the Crisis in Learning," Teachers College Record, 58:140, December, 1956.

Smoke asserted that "a word is not a concept, but a concept always involves a word or some other instrument for carrying symbolism."[5] Further investigation of Smoke's theory disclosed that in his definition a concept becomes a symbolic response which is made to the members of a class of stimulus patterns but not to other stimuli.[6]

Concepts were characterized by Brownell and Hendrickson as

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[1] Robert J. Havighurst, Developmental Tasks and Education, p. 21.

[2] Homer B. Reed, "Factors Influencing the Learning and Retention of Concepts. I. The Influence of Set," Journal of Experimental Psychology, 36:74, February, 1946.

[3] William H. Burton, Roland B. Kimball and Richard L. Wing, Education for Effective Thinking, p. 154.

[4] Howard H. Kendler and Alan D. Karasik, "Concept Formation as a Function between Response Produced Cues," Journal of Experimental Psychology, 55:279, March, 1958.

[5] Kenneth L. Smoke, "The Experimental Approach to Concept Learning," Psychological Review, 42:277, May, 1935.

[6] Ibid., p. 173.

"being more than a 'word,' far more than an arbitrary association."[1] These authors described concepts as abstractions, complex affairs with dimensions.[2]

Curti surveyed numerous research findings and concluded that "a concept is a present item of experience functioning in a symbolic capacity as a response to any one of a class of objects or relationships having a common characteristic."[3] Thus Curti joined the researchers who defined a concept as a general idea which may be represented by a symbol and which stands for a class of objects or of relationships.

Heidbreder defined concept as "a logical construct which, through signs or symbols or both, is transferable from situation to situation and communicable from person to person."[4] Heidbreder did not define concepts as ideas. She explained the meaning of concepts as used in her studies as follows:

> . . . the term [concept] denotes nothing psychological as such; it refers to no reaction of the organism, molar or molecular, to no mental content or process, conscious or unconscious. As logical, a concept is objective and interpersonal in the sense in which a geometric figure or an algebraic formula, a set of traffic rules or the custom of shaking hands, is objective and interpersonal.[5]

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[1] William A. Brownell and Gordon Hendrickson, "How Children Learn Information, Concepts, and Generalizations," _The Forty-Ninth Yearbook of the National Society for the Study of Education_, p. 175.

[2] _Ibid._, pp. 106-107.

[3] Margaret W. Curti, "Child Development-X. Concepts," _Encyclopedia of Educational Research_, p. 175.

[4] Edna Heidbreder, "The Attainment of Concepts: I. Terminology and Methodology," _The Journal of General Psychology_, 35:173, October, 1946.

[5] _Ibid._, p. 173.

Heidbreder continued:

> So defined, concepts are obviously not the subject matter investigated in psychological research; they are among the means by which certain psychological activities may be investigated.[1]

Woodruff has defined the character of concepts as a "combination of meaning, value, and symbols."[2] He explained that the human mind stores experiences and forms mental pictures. "it [a concept] is a 'construct,' something made by a brain, in the effort of the person to understand something and cope with it."[3] Harvey, Hunt and Schader shared Woodruff's belief that concepts are "stored, organized, effects of past experiences."[4]

Bruner, Goodnow and Austin alleged that the controversy concerning the meaning of concepts is profitless. They defined a concept as a "network of significant inferences" that allow individuals to transfer what is observed and known of one object or event to an unobserved object or event.[5]

Vinacke studied numerous researchers' definitions of concepts and concluded that concepts "may be regarded as selective mechanisms in the mental organization of the individual tying together sensory impressions, thus aiding in the identification and classification of objects."[1] He continued that concepts can be given names and be detached from specific instances by means of a word. The concept, after recognition, then is used to manipulate experiences. The symbolic response (concept) represents whatever it has been associated with in past experience. In Vinacke's system the concept does not have a fixed, permanent meaning but represents a momentary focussing of experiences upon a particular stimulus situation.[2]

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[1] Ibid., pp. 173-174.

[2] Woodruff, op. cit., p. 64.

[3] Ibid., pp. 64-65.

[4] O. I. Harvey, David E. Hunt and Harold M. Schader, Conceptual Systems and Personality Organization, p. 10.

[5] Jerome S. Bruner, Jacqueline J. Goodnow and George A. Austin, A Study of Thinking, p. 244.

In reviewing numerous researcher's and educator's definitions of concepts, contradiction is found in the meanings given for concepts. Some writers maintained that concepts are words while other writers explained concepts as ideas. "Symbols" and "images," and the "response to stimuli" were commonly used to define concepts.

After investigating and comparing the similarities and differences of the proposed meanings of "concept," and reaching agreement on terminology, this writer felt that an appropriate definition for "concept" was a mental image a person has for something resulting from experience. It is the combination of meaning or understanding, value or feeling, and symbols or language. This definition for the term "concept" did not appear to violate definitions proposed by the majority of researchers and was one that indicated a relationship of "concept" to the individual involved.

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[1] W. Edgar Vinacke, "The Investigation of Concept Formation," Psychological Bulletin, 48:5, January, 1951.

[2] Ibid., 48:5-6.

II. CONCEPT ATTAINMENT

Many studies have been made concerning the attainment of concepts by adults, children, and animals. Reports of research that seemed most pertinent to this study were those dealing with children and adults. The difference in children's formation of concepts and adults' attainment of concepts appears to be that children are learning something new or are forming concepts while adults are frequently learning to apply and/or reconstruct concepts they already possess to solve a variety of problems. When a child can identify the furry thing that meows as a cat, he has learned the concept, cat. When he recognizes the hairy thing that barks as a dog, he has learned another concept, dog. When he can distinguish between the two, he has attained a new concept, animal. Furry, hairy things with four legs, a tail, and two ears are animals. Later he will learn that animals include more than dogs and cats. Vinacke summarized that the child's formation of a concept appears to follow a sequence of (1) perception, (2) abstraction, and (3) generalization.[1]

Russel stated "that concepts develop out of related perceptual experiences and as a result of the child's reorganization of experiences in a problem-solving or creative way."[2] He continued:

> A child may become familiar with pieces of furniture which have a flat top, legs, and a place to eat or to prepare food, and he

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[1] Vinacke, op. cit., 48:5.

[2] David H. Russell, Children's Thinking, p. 117.

> learns to attach the name table to these objects. Although the differences between his own high chair and other chairs may confuse the issue a bit, he learns that a table is not a chair.[1]

This process of discovery and identification such as children carry out is one of concept formation while combining separate concepts to develop new meaning may be called concept attainment. Because of adults' past experiences and store of concepts, they are able to apply concepts or some aspect of concepts to solve a problem or to attain new conceptual meaning. The processes of grasping abstract ideas and of generalizing are conscious, controlled, and motivated activities for adults.

The process of attaining concepts was the subject of Heidbreder's early research concerning concepts. She said:

> . . . a subject is said to "attain" a concept when for the first time during an experimental session, he produces behavior conforming to the specified criteria. The word "attain" is used whether the concept is one which the subject has never used before, or one with which he is more or less familiar and is using for the first time in the particular experimental situation.[2]

The general procedure for investigating concept attainment by individuals has consisted of a series of stimuli containing a common concept which were presented successively to the subject in an apparatus or by the card sorting method. The exposure apparatus provided for a continuous succession of exposures at a uniform rate of speed. The subject, seated before the apparatus, saw a screen on which the stimuli appeared, one at a time. The apparatus operated in such a way that each stimulus was exposed for a specified time, then replaced by its successor. The subject was expected to memorize the stimuli and be able to reproduce it in some manner.

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[1] Ibid.

[2] Edna Heidbreder, "The Attainment of Concepts: I. Terminology and Methodology," The Journal of General Psychology, 35:174, October, 1946.

The card sorting technique had the stimuli copied on cards. The cards were thoroughly shuffled and the subject was to see how rapidly the cards could be sorted into piles according to a system of classification which he saw as inherent in the cards. The subject was then questioned about the schemes of classification he had used and/or abandoned. There was always a pre-determined "right" way in which the cards were to be sorted, depending upon the concept to be attained by the subject.

Heidbreder performed a lengthy series of experiments in regard to adults' attainment of concepts. Both familiar and novel concepts were used. Some familiar concepts used in the experiment were tree, circle, and six; novel concepts were unconventional spatial forms which presumably had not been conceptualized by the subjects. Results of the experiments indicated that concepts were attained in a regular order; concepts of concrete objects or thing-like objects (tree) first, concepts of spatial geometrical forms (circle) next, and concepts of numbers or abstractions (six) last.[1] The human mind appeared to move from concrete to abstract.

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[1] Ibid., p. 192.

Heidbreder concluded from results of early experiments that concepts were regularly evolved more easily from pictured materials than from verbal materials. She found that concepts were often used with consistent correctness although the subject was unable to formulate the concept verbally. There were instances of both sudden and gradual concept formation throughout the experiments.[1]

In a study of the formation of concepts by children, Reichard, Schneider and Rapaport identified three levels of concept development: (a) concrete, the most primitive level (apple or banana--both have peels), (b) functional, function or usage level (banana and apple are both eaten), and (c) conceptual or abstract, the highest level (both banana and apple are fruits).[2] These findings corroborated Heidbreder's, stated earlier.

Reed's theory regarding concept attainment was that the various factors that influence the attainment of concepts can be evaluated more effectively if the influence upon retention as well as learning is known. The instrument used involved forty-two cards, each of which having four unrelated words on the face and a nonsense syllable on the reverse side. The subjects' task was to learn the name (nonsense syllable) of each card and the task was finished when he reached this errorless trial in naming all the cards. One group learned only the names of the cards and the other group learned both names and meanings. Reed's problem was to "investigate the influence of set or attitude determined by different instructions upon the learning and retention of concepts.[1]

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[1] Edna Heidbreder, "A Study of the Evolution of Concepts," The Psychological Bulletin, 31:673, October, 1934.

[2] Suzanne Reichard, Marion Schneider and David Rapaport, "The Development of Concept Formation in Children," American Journal of Othopsychiatry, 14:157, January, 1944.

Results of Reed's experiments indicated a set to learn meanings as well as names produced a much higher rate of learning and degree of retention than a set to learn names only. Reed suggested that this result occurred because those individuals who learned meanings as well as names were more likely to keep the goal of learning the concepts in mind and participate more effectively in the problem situation by searching for possibilities for grouping and testing hypotheses. These individuals appeared to be seeking relationships in apparently unrelated things.

In a card sorting technique similar to one developed and used by Heidbreder, Forgus and Fowler drew conclusions concerning the order of dominance in concept attainment as affected by experience. They concluded that concepts based on familiar experiences are attained most readily.[2]

Bruner, Goodnow and Austin stated that in learning a concept

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[1] Homer B. Reed, "Factors Influencing the Learning and Retention of Concepts. I. The Influence of Set," Journal of Experimental Psychology, 36:73, February, 1946.

[2] Ronald H. Forgus and Harry Fowler, "The Order of Dominance in Concept Attainment as Affected by Experience," Journal of Psychology, 44:107, July, 1957.

"the first and most notable thing about the sequence of events set forth is that it can be described as a series of decisions."[1] These educators referred to the regularities in decision-making as strategies, "the pattern of decisions in the acquisition, retention, and utilization of information that serves to meet certain objectives, i.e., to insure a certain form of outcome and to insure against certain others."[2] In essence, strategies were the plans of action in attainment of a concept. Strategies used by people appear to be altered with the nature of the concept being sought, with the kinds of pressures that exist in the situation, with the consequences of behavior, and other variables in the situation in which a person finds himself, these researchers concluded.[3]

Woodruff identified the process of attaining a concept as five steps: perception, conceptualization, thinking, evaluating, and choosing.[4]

1. Perception	Interaction of a person with a fact or truth allows a person to form a mental image of the experience.

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[1] Jerome S. Bruner, Jacqueline J. Goodnow, and George A. Austin, A Study of Thinking, pp. 53-54.

[2] *Ibid.*, p. 54.

[3] *Ibid.*, p. 55.

[4] Woodruff, *op. cit.*, p. 71.

2. Conceptualization	The mental image becomes meaningful and fits into an organization and relationship with other sensory experiences.
3. Thinking	The mental image is thought about and compared with past experiences. This step leads to increased understanding.
4. Evaluation	Mental images created are sorted according to past experiences and applicability to future behavior.
5. Choosing	A selection to bring about the results desired is made according to what the mental image has indicated to the individual.

This learning, thinking, and choosing (concept attainment) may be done consciously or the individual may be unaware of this attainment process, Woodruff concluded.[1]

Brownell and Hendrickson proposed that concepts can be placed on a "continuum of meaningfulness."[2] On the left end are the concepts with a minimum of meaningfulness while on the right end are concepts rich in meaning. Between the two ends on the scale are degrees of meaningfulness. As a concept takes on meaning through experience it moves farther to the right.

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[1] Ibid., p. 72.

[2] Brownell and Hendrickson, op. cit., p. 93.

Results of reviewed studies suggested that children can and do form concepts. The main differences in this process for children and adults are of degree rather than kind. Children have fewer concepts. This may be due to lack of experiences. Children acquire concepts in a definite order. For example, they recognize triangles, roundness, and later establish size relationship. Studies have shown that concepts tend to change with increasing age, become more numerous, more complex, and more logical.

Other characteristics noted about concept attainment were that while there were instances of sudden formulation, concepts were also attained gradually; concepts were attained in a regular order; concepts were evolved more easily from pictured materials than from verbal materials; concepts were sometimes used with consistent correctness although the subject was unable to formulate the concept verbally; learning names as well as meanings for nonsense symbols produced a higher rate of learning and greater degree of retention than learning symbols alone; and concepts based on familiar experiences are attained most readily.

Concepts change as experiences grow; they are not fixed or constant. Concepts develop from simple to complex and gain in meaning as the learner understands and relates new experiences to previous experiences.

Individual differences affect a person's ability to attain and use concepts. Therefore people probably attain and use concepts at different levels and various concepts may hold varying degrees of meaningfulness for individuals. Concepts are attained through experiences. The process can be a life-long one.

III. CONCEPTS AS AN AID TO LEARNING

Fifty years ago a well-educated person was able to know the nature of all the various fields of knowledge. Today, a man is faced with an explosion of knowledge and a challenge to master ever-increasing bodies of knowledge. Any attempt to comprehend the abundance of knowledge available is perplexing and formidable. Educators have the colossal task of preparing people to master the world they live in, meet new situations in life, cultivate excellence through development of potentialities, and develop respect for mankind through understanding.

Phenix stated that this "crisis in learning consists in the disproportion between what is available and necessary to know and the capacity of the individual to know it."[1] He proposed

> . . . to effect a radical simplification in the content of knowledge to be learned. This can be done by taking advantage of the fact that knowledge is not merely an accumulation of isolated and independent items of information. Individual items are interconnected within idea-systems. Each bit of knowledge resides within one or more characteristic frameworks. Among the many ideas which can be known certain dominant family resemblances can be discerned. These similarities of type make it possible to classify what is known into fields of knowledge. . . .[2]

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[1] Philip H. Phenix, "Key Concepts and the Crisis in Learning," Teachers College Record, 53:138, December, 1956.

[2] Ibid., p. 139.

Carmichael stressed that emphasis on facts rather than on ideas is a weakness of education. An approach that will improve the process of education is, he said, an "understanding of the fundamental ideas upon which our culture rests."[1]

The task of education then seems to be one of identification of the major ideas in a field. After the major ideas have been identified, their relatedness can be interpreted. When students are aware of important ideas they have built a structure upon which a detailed descriptive knowledge of a field can be based. The value of concepts rests in their use in guiding students to become decision makers who have the necessary knowledge and abilities to solve problems and make judgments for themselves.

Burton, Kimball and Wing have pointed out the value and use of concepts in education. "Concepts give us a relatively stable, relatively permanent system of knowledge."[2] By sorting out and grouping interrelated knowledge, knowledge can be recalled and used. This is the process of generalization. "Class concepts and abstraction enable us to generalize," they wrote.[3] The ability to generalize allows students to transfer understanding or meaning from one thing to another;

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[1] Oliver C. Carmichael, "Improving the Quality of Graduate Education for Prospective College Teachers," Current Issues in Higher Education, p. 204.

[2] Burton, Kimball and Wing, op. cit., p. 155.

[3] Ibid., p. 155.

to identify and place individual items in a system; and to add to knowledge about a specific thing by referring to the total connotation of the concept. "Concepts provide a framework and guideposts for thinking."[1] They allow students to set up policies which can be tried out in experience.

Thoughtful organization of knowledge provides a system of finding meaning for learning tasks. Memorization rarely gives meaning to material while the search for relationships and reorganization of understandings can assist in mastery of a new situation. The ability to ascertain (to see) relationships provides the individual with tools to use in a new, somewhat different, somewhat similar situation.

Brownell and Hendrickson emphasized that "there is no way to give learnings to the learner. Meaning comes only with individual experience, and experience is not wholly subject to external control."[2] The amount of meaning students have for a learning task is "relative to the person who is fitting that item into his pattern of thought and action."[3]

Learning tasks cannot be taught to students as concepts, for one person cannot give a concept to another person. When the "big ideas" are identified by the individual and the learning tasks are organized by him they begin to show relationship and to have meaning for him. Arbitrary associations cease to be meaningless. In this manner concept attainment facilitates learning.

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[1] Ibid., p. 156.

[2] Brownell and Hendrickson, op. cit., p. 96.

[3] Ibid.

IV. EVALUATING ATTAINMENT OF CONCEPTS

Learning is often defined as a process which results in changed behavior on the part of an individual and which is the result of some form of experience such as activity, training or observation. The attainment of concepts is a learning process. Like other learning processes, concept attainment is a developmental procedure which includes evaluation. Bloom defined evaluation as

> the making of judgments about the value for some purpose, of ideas, works, solutions, methods, material, etc. It involves the use of criteria as well as standards for appraising the extent to which particulars are accurate, effective, economical, or satisfying. The judgments may be either quantitative or qualitative, and the criteria may be either those determined by the student or those which are given to him.[1]

Most evaluation in education is concerned with the appraisal of abilities, characteristics and progress toward achieving learning goals. Likewise, evaluation of concept attainment has been concerned with assessing the change of behavior as the result of such attainment. Measurement of concept attainment and assessing the quality of that attainment become the two stages in this evaluation process.

Heidbreder measured concept attainment in experiments with an exposure apparatus by using criteria such as repetitions, promptings, and opportunities to apply the concepts to new situations. At the close of the experiment the mastery of the concepts was tested first by having the subject write a verbal definition of each concept, and then by having him take an objective examination.[1]

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[1] Benjamin S. Bloom, (ed.), Taxonomy of Educational Objectives-Handbook I: Cognitive Domain, p. 185.

In a later experiment by Heidbreder in which she employed the card sorting technique she concluded that direct observations of events actually in progress supplemented the inferences concerning sequences of events evaluated in the exposure apparatus memory experiments.[2]

Reed evaluated subjects' learning and retention of concepts by asking the subjects to tell the definitions they worked out for nonsense syllables, pertinent remarks made during the study, the amount of time used, number of promptings required, erroneous responses, and total time consumed in the process. A retention test was given to the subjects one week after the learning.[3] Reed indicated that a set to learn meanings as well as names yielded a higher degree of retention. Reed stated:

> . . . the high retention of concepts as compared to nonsense syllables is a fact of tremendous significance for education. If we study or teach with the objective of obtaining or conveying

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[1] Edna Heidbreder, "A Study of the Evolution of Concepts," _The Psychological Bulletin_, 31:673, October, 1934.

[2] Edna Heidbreder, "The Attainment of Concepts: VIII. The Concept Utilization of Verbally Indicated Instances," _Journal of Psychology_, 27:289-290, April, 1949.

[3] Homer B. Reed, "The Learning and Retention of Concepts. V. The Influence of Form of Presentation," _Journal of Experimental Psychology_, 40:504, August, 1950.

> clear ideas, we need no longer fear that two-thirds will be forgotten within one day. But if we study or teach the incomprehensible, then that is a result to be hoped for.[1]

Smoke stressed the importance of having a standard against which to compare individual performance in relation to concept attainment. He stated:

> The experimental psychologist must have a standard in terms of which he can judge whether his subject has learned a concept. Present knowledge does not make possible the setting up of a biophysical criterion of concept learning, that is to say, it is at present impossible to indicate the neuromuscular and the neuroglandular events that must occur before an individual may be said to have learned a concept. It is entirely possible, however, to set up a biosocial criterion.[2]

He proposed the following plan to judge whether a given individual had attained a concept. He judged as significant

> . . . the consistency with which he the subject is able to make the symbolic responses that differentiate the members of the class of stimulus patterns in question from stimuli which are not regarded as falling in that class.[3]

Brownell and Hendrickson concluded that the test in evaluation of conceptual learning "is the ability to use the concept correctly."[4] The basic tests are not simply speed and accuracy as in the case of arbitrary association.[5] Usefulness would appear to be important.

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[1] Homer B. Reed, "Factors Influencing the Learning and Retention of Concepts. I. The Influence of Set," Journal of Experimental Psychology, 36:82, February, 1946.

[2] Smoke, loc. cit.

[3] Ibid.

[4] Brownell and Hendrickson, op. cit., p. 16.

[5] Ibid.

Chase completed a study concerning an application of levels of concept attainment to measures of vocabulary. The purpose of the study was to test the applicability of a previously developed three-level technique to the measurement of vocabulary in arithmetic. Twenty-five words were selected for the test. Four alternative responses (definitions) were constructed for each word; one defining the term with a concrete example, one definition representing the usage level, a third on an abstract or conceptual level, and the fourth alternative, a distracter, which was not appropriate to the term. Subjects were instructed that more than one answer might appear correct, but that they should choose the one answer that they believed was the best definition of the term.

Results of the study supported the hypothesis that one should be able to measure concept attainment by using a tool which delineates several levels of achievement in the construction of these concept statements.

Chase concluded that:

> . . . on the practical level, a teacher using a test such as the one here being evaluated could determine the state of concept formation at which the students were operating, and subsequently choose materials and adapt activities in accordance with the extent to which the concepts of the class have progressed.[1]

In reviewing studies concerning the measurement and evaluation of concept attainment suggestions were found as to how to judge when a subject had attained a concept. Criteria for measuring and evaluating attainment included consistency with which the subject was able to differentiate classes of a unit; ability to use the concept correctly; direct observation of the process involving concept attainment; and ability to define the concept.

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[1] Clinton I. Chase, "An Application of Levels of Concept Formation to Measures of Vocabulary," The Journal of Educational Research, 55:77, October, 1961.

The methods of measuring and evaluating concept attainment are varied but the primary criterion in each appraisal appears to be changed behavior as a result of such attainment.

V. CONCEPT STUDIES RELATED TO HOME ECONOMICS EDUCATION

A limited amount of research pertaining to concepts related to home economics education was found. This review reports findings of five studies that guided the investigator in the present study.

Beuttler conducted a study to determine what concepts college freshmen in home economics had of selected terms used in home management. The concepts were secured by means of a questionnaire asking for understanding of selected concepts.[1]

The questionnaire Beuttler used required the subjects to respond to selected concepts according to the following key:[2]

A	Agree strongly	If you believe that the statement is almost entirely correct and complete.

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[1] Doris Abels Beuttler, "Factors Related to Certain Concepts of Home Management Held by Freshmen in Home Economics," unpublished Master's thesis, p. 15.

[2] Ibid., p. 66.

X	Disagree because it is incomplete	If you believe the statement is incomplete.
Y	Disagree because it is only partly correct	If you believe the statement is only partly correct.
D	Disagree strongly	If you believe that the statement is mostly incorrect or incomplete.

Jones analyzed the principles and generalizations for curriculum making in higher education and developed implications for home economics teachers.[1] The purposes of this study were (1) to analyze the curriculum making process in higher education with emphasis specifically on home economics, (2) to identify principles and generalizations for curriculum making, (3) to select some aspects of general education suitable for inclusion in a college home economics curriculum, and (4) to point out how the implications of this study could be used for the improvement of one department of home economics.[2]

The procedure Jones used consisted of library study to guide her in analyzing the curriculum problem and in extracting principles and generalizations for curriculum making. The consensus of authorities concerning the principles and generalizations of curriculum making in general education was collected and tabulated on charts.

Eighteen principles and generalizations which curriculum workers could apply as guides in planning a curriculum represented the consensus of the majority of the authorities. These principles and generalizations pertained to philosophy, aims and objectives, learning experiences, and evaluation. In considering the aspects of general education suitable for a home economics curriculum, twenty-one principles and generalizations received the consensus of the authorities.

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[1] Erma Beatrice Jones, "Analysis of Principles and Generalizations for Curriculum Making in Higher Education with Implications for Home Economics," unpublished Doctor's dissertation, pp. 122-123.

[2] *Ibid.*

Jones stated that "drastic changes in society today demand that home economics be alert in making adjustments to new invention, ideas and ways of life."[1] She concluded that curriculum workers can use the principles identified in this study as "guides for rethinking their philosophy of education and of life, and as a result, formulate new statements of a philosophy of home economics."[2]

Banks' research was exploratory in nature.[3] The objectives of Banks' study were (1) to discover prospective teachers' concepts toward one of the developmental tasks of adolescents, and (2) to explore the relationship of the concepts held to certain background and personality factors. The subjects participating in the experiment were sixty-three women students in home economics education in their junior and senior years of college.

On the basis of investigation, the categories selected for these studies regarding the subject's concepts were:

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[1] Ibid.

[2] Ibid.

[3] Marie Banks, "The Identification of Some Concepts of Adolescent Development Held by Prospective Home Economics Teachers and the Relationship of these Concepts to Certain Background Factors," unpublished Doctor's dissertation, p. 1.

1. laissez faire
2. developmental
3. restrictive[1]

Banks concluded that there were no clear-cut tendencies toward a restrictive, developmental, or laissez faire attitude for the adolescent task selected for this study. She suggested that the teacher education pre-service program include more experiences to help the student clarify their concepts toward adolescents. Banks stated that methods of instruction used in this study might be used to clarify concepts and indicated the need for more methods of instruction to be devised.[2]

The purpose of Buchanan's study was to identify concepts in Home Economics Education which seemed desirable, those which were controversial and needed clarification, and those which should be rejected.[3] The procedure followed by Buchanan consisted of an opinionnaire composed of ninety-three concepts pertinent to home economics education. The opinionnaire was administered to 197 subjects including state supervisors of home economics education, school administrators, and secondary homemaking teachers.

The subjects were asked to consider each concept and rate their relative agreement concerning the concept's contribution to the success of the homemaking teacher in the secondary school according to the following key:

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[1] Ibid., p. 21.

[2] Ibid., p. 97-102.

[3] Bonnie Bell Buchanan, "An Analysis of Opinions Concerning Selected Concepts of Home Economics Education," unpublished Doctor's dissertation, p. 46.

Strongly agree
Agree
Uncertain
Disagree
Strongly disagree[1]

Forty-eight of the original concepts received seventy-five per cent or more agreement by all participating groups and were accepted as basic for development in the home economics teacher training program.[2]

A Pennsylvania statewide curriculum committee for teacher education embarked upon a plan to organize for the college level curriculum. They stated goals as competences which a good teacher should have and generalizations were phrased for each competence. Experiences were described through which a future teacher could attain each competence. Eight competences important in teacher education were identified as follows: develop and use a philosophy of life, of education, and of home economics as a basis for thought and action; identify and accept professional role; enrich cultural and intellectual background; maintain optimum physical and mental health; initiate and maintain good interpersonal relationships; teach effectively; promote, use, and participate in research; and cooperate intelligently with community efforts which have significance for individual and family well-being.[3] These competences provided a structure of concepts upon which generalizations were broadly applied and related to several situations.

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[1] Ibid., p. 160.

[2] Ibid., pp. 129-137.

[3] Marjorie East and Hazel M. Hatcher, Teachers Education Resource Materials for Home Economics, Teacher Education Leadership Guide Number One, Progress Report, July, 1962, pp. 1-93.

Although these studies are somewhat different from the present one, they served as a guide to the investigator in determining how previous researchers identified and treated concepts in the education context.

In Chapter III data from the Methods of Teaching Home Economics Course are presented and discussed.

CHAPTER III

THE METHODS OF TEACHING HOME ECONOMICS COURSE

The methods of Teaching Home Economics class was a part of the professional block semester, described in Chapter I. The investigator observed the class daily. Records were kept by the investigator of problems for study, presentations by the teacher, and student participation.

Each major problem for study was stated as a key concept for the course. Broad generalizations were stated as they related to each concept. It will be noted that four major, or key, concepts were identified. These were:

1. Effective and meaningful planning helps the teacher as she guides pupils toward learning objectives.
2. Student teaching provides an opportunity for the student teacher to begin to assume the role and responsibilities of a classroom teacher.
3. Programs of learning are planned to meet needs of specific groups of pupils having a variety of individual differences.
4. A variety of means may be used to evaluate pupil learnings effectively.

Table I shows the concepts and related generalizations as they were recorded in the Methods of Home Economics class.

TABLE I

CONCEPTS AND RELATED GENERALIZATIONS FOR THE
METHODS OF TEACHING HOME ECONOMICS COURSE

Concepts	Generalizations
1. Effective and meaningful planning helps the teacher as she guides pupils toward learning objectives.	Determining the objectives for a course of study is the first step in effective planning.
	Objectives serve as a guide to determine a course of action and are developed in relation to desired outcomes of learning.
	Meaningful objectives identify both the kinds of behavior to be developed by pupils and the area of life in which this behavior is to operate.
	A behavioral goal may be stated as a concept to be attained by pupils.
	A concept is a mental image of something a person has experienced through his own sense organs. It is a combination of meaning or understanding, value or feeling, and symbols or language.
	Concepts assist in identifying, organizing, structuring, and unifying subject matter content and serve as a guide in directing thinking.
	Desired outcomes of learning may be arranged from simple to complex in order of difficulty and there exist an interrelationship among them. Simple behaviors are viewed as components of more complex behaviors.

TABLE I (continued)

Concepts	Generalizations
	Ability to generalize allows individuals to relate past experiences to new situations.
	Principles are statements of fact or condition that relate action and result.
	Meaningful lesson approaches create interest and motivate learning.
	Effective teaching points summarize knowledge which explains, describes, predicts, or determines the most appropriate and relevant action or direction to be taken.
	Guide questions organize thoughts, present various viewpoints, interpret ideas, and summarize progress of the lesson.
	A variety in methods of instruction used increases teaching efficiency by helping to maintain pupil's interest in class work, permitting flexible planning, and providing for individual differences among pupils, classes, and teachers.
	Situations for evaluation provide opportunity to assess growth toward learning objectives.
	Meaningful assignments guide pupils by assisting them in finding references to help them solve problems.
	Appropriate teacher and pupil references organize contributing resource materials.

TABLE I (continued)

Concepts	Generalizations
	A variety of effective teaching materials is available for use by teachers and pupils in home economics.
2. Student teaching provides an opportunity for the student teacher to begin to assume the role and responsibilities of a classroom teacher.	The student teaching experience provides illustrations of how individuals differ with respect to patterns of growth and development and in terms of individual needs.
	Student teaching experiences will vary due to individual differences among cooperating teachers, schools and communities.
	The role and responsibilities of the teacher include planning for and guiding learning, managing classroom activities, maintaining discipline, advising pupils, and guiding certain out-of-class activities.
	A desirable goal of discipline is the ability and willingness to assume responsibility for one's own conduct and for one's own behavior in a peer group.
	The high school home economics teacher has unique responsibilities in preparing pupils for effective and successful individual and family roles.
	Discipline problems may be the result of poor teaching.
	Poor teaching, which does not aid the student in solving his own felt difficulties, and sets impossible standards, causes restlessness.

TABLE I (continued)

Concepts	Generalizations
	Discipline problems that may occur when teaching is not at fault are the alteration between adult and adolescent behavior (ambiguity) and unsolved personal problems.
	Teacher-pupil planning which allows pupils to assist in setting goals according to their needs encourages pupil interest and decreases misbehavior.
	Information about the career of teaching home economics needs to be interpreted to high school pupils.
	A knowledge of the content and development of home economics programs is basic to an intelligent understanding and interpretation of the home economics program.
	Professional growth comes through objective self-evaluation and a professional point of view.
	Observation of classroom teachers and discussion of classroom events can assist student teachers to gain a concept of the teaching-learning process and to realize specific applications of this process for home economics education.
3. Programs of learning are planned to meet needs of specific groups of pupils having a variety of individual differences.	Individual differences of pupils found in classrooms include differences in intellectual competence; socio-economic status; maturity; interest in learning; personal and social needs; behavior, attitudes, and values; and background and previous experience.

TABLE I (continued)

Concepts	Generalizations
	Needs and problems of adolescents are determined by environment, social customs, and degree of attainment of developmental tasks.
	Needs of young homemakers are determined by environment and social customs.
	Continuous educational provisions are the most effective when working with individual differences.
	The student teaching experience provides illustrations of how individuals differ with respect to patterns of growth and development and in terms of individual needs.
	Student teaching experiences will vary due to individual differences among cooperating teachers, schools and communities.
	Teacher-pupil conferences are a means of recognizing and providing for individual differences and of making plans for follow-up experiences.
	Home economics classes for boys help to prepare them for the male's changing role in society.
	Although all secondary home economics programs have elements of similarity, learnings vary within certain limits from school to school due to individual differences existing among pupils, families, communities, and home economics teachers.

TABLE I (continued)

Concepts	Generalizations
	The state's Curriculum Guide suggests resource materials which teachers may use to plan homemaking programs in a variety of situations.
	Individualized instruction is an effective method of guiding each pupil in growth as far as he is able to grow.
	Individualized instruction can be achieved in heterogeneous classrooms.
4. A variety of means may be used to evaluate pupil learnings effectively.	Effective evaluation is quantitative, qualitative, consistent, and is continuous and planned by the teacher.
	Learnings are evaluated in terms of the objectives.
	Situations for evaluation provide opportunity to assess growth toward learning objectives.
	Tests are given for specific purposes. Purposes may be to measure the amount or quality of learning, to measure the effectiveness of teaching, to rank pupils as to achievement, or to determine grades for reporting at the end of a growing period.
	Effective tests measure attainment of critical points of learning.
	Effective tests allow the pupil to show evidence of attainment of important learning goals.

TABLE I (continued)

Concepts	Generalizations
	Pencil and paper tests are one means of evaluating learning.
	Growth toward objectives and final results are criteria for interpretation of test results.

These were the key concepts that students were expected to attain during the course and to be able to employ during the student teaching experience. Behavior of students in student teaching situations, conferences, and on the final examination provided evidence of relative attainment and of growth toward the realizations inherent in the related generalizations.

In Chapter IV will be found evaluations of concept attainment by students in this study.

CHAPTER IV

CONCEPT ATTAINMENT IN THIS STUDY

Evaluation has been defined by Klausmeier as "the making of judgments about the relative desirability of something in terms of a standard."[1] He emphasized that there is a close relationship between evaluation and measurement with evaluation "being the more comprehensive and including all of the measurement devices which facilitate the making of judgments."[2] The attainment of concepts in this study was evaluated through the use of the following measuring devices: a pencil and paper test which was the final examination for the methods course; the _Terman Concept Mastery Test, Form T_ (_CMT_); conferences with students; and behaviors evidenced during the five-week student teaching experience. As stated in Chapter II, evaluation of concept attainment in this study has been concerned with assessing changes in behavior as one result of such attainment.

I. EVALUATION INSTRUMENTS AND PROCEDURES

The final examination. The pencil and paper test (Appendix A), described in Chapter I, was developed by the investigator to assist in appraising attainment of the concepts from the Methods of Teaching Home Economics course.

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[1] Herbert J. Klausmeier, _Learning and Human Abilities; Educational Psychology_, p. 443.

[2] _Ibid_.

A trial test was developed and administered to all students in the Methods of Teaching Home Economics class taught during the period immediately prior to this study. This trial of the testing instrument allowed the investigator to identify certain portions of the test that could be improved and to develop procedures to facilitate scoring. This trial test was read and criticized by five recent home economics education students (Appendix B). Suggestions made by this jury were incorporated in the final test instrument wherever possible.

Part I of the test was designed to appraise students' knowledge of terminology, their ability to explain the usefulness of selected parts of a lesson plan, and their ability to state a generalization in an appropriate manner. This part of the test required students to state generalizations related to the lesson planning process by indicating their concepts of the purpose of various parts of a lesson plan. Both Heidbreder and Reed evaluated concept attainment by having subjects write or verbalize definitions of concepts.

When evaluating responses in Part I the investigator interpreted a correct generalization regarding "purpose" as one that told "why" as well as "what." (Example—"Guide Questions"—Guide questions are questions asked by the teacher which help pupils organize thoughts, present various viewpoints, interpret ideas, and summarize progress of the lesson.)

Part II of the test was constructed to assess students' ability to determine the accuracy and completeness of generalizations about key concepts concerning teaching home economics. Brownell and Hendrickson emphasized that the test of conceptual learning "is the ability to use the concept correctly."[1] They continued that "accuracy involves correct relationship in language situations of a complicated character."[2]

Responses for Part II were adapted from Beuttler's questionnaire and Buchanan's opinionnaire (both described in Chapter II). Beuttler recommended that revisions be made in the definitions she used for the choices of responses.

A	Agree strongly	If you believe that the statement is almost entirely correct and complete.
X	Disagree because it is incomplete	If you believe the statement is incomplete.
Y	Disagree because it is only partly correct	If you believe the statement is only partly correct.
D	Disagree strongly	If you believe that the statement is mostly incorrect or incomplete.

She advised that responses be changed to

A Agree strongly
X Disagree
D Disagree strongly

The responses used by Buchanan were

Strongly Agree
Agree
Uncertain
Disagree
Strongly Disagree

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[1] William A. Brownell and Gordon Hendrickson, *The Forty-Ninth Yearbook of the National Society for the Study of Education*, Part 1: Learning and Instruction, p. 116.

[2] *Ibid*.

The investigator chose to use

A Complete and Correct
B Incomplete and/or Partly Correct
C Incorrect

This selection was made in view of the fact that the purpose of this test was to assist in evaluating students' attainment of the concept, not to determine agreement or disagreement with the concept. Students indicated answers by blacking out the letter corresponding to the key above which described their belief about the generalization.

On the trial test a correct, an incomplete and/or partly correct, and an incorrect statement were included for fifty generalizations related to each concept. The final test did not include all three statements for each concept, for including all three did not seem appropriate or possible. Results of the trial test appeared to indicate that some statements were ambiguous and/or obviously complete, incomplete, or incorrect.

Part III of the test was structured to assess students' ability to analyze and evaluate usefulness of information learned. It consisted of some true and some false generalizations about the effective utilization of selected teaching techniques. Students indicated responses by blacking out T or F. Heidbreder stated that the attainment of a concept is the "outcome of the subject's reactions in the conditions of the experiment."[1] Although response on a pencil and paper test is not the same as the actual use of a teaching technique, if a student can recognize the accuracy or inaccuracy of statements regarding utilization of techniques, there is some evidence that she has attained a degree of understanding in relation to the concept.

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[1] Edna Heidbreder, "The Attainment of Concepts: I. Terminology and Methodology," The Journal of General Psychology, 35:175, October, 1946.

Teaching techniques selected for the test were those allowing for a relatively high degree of personal involvement of the teacher and student. Concepts and related test item numbers are presented in Appendix C.

Concept Mastery Test. The CMT (Appendix D), described in Chapter I, was administered to the experimental group after students had completed the Methods of Teaching Home Economics course and the student teaching experience. The test deals chiefly with ability to use abstract ideas.

> Abstractions are the shorthand of the higher thought processes, and a subject's ability to function at the upper intellectual levels is determined largely by the number and variety of concepts at his command and by his ability to see relationships between them.[1]

Because concept attainment is a function of the brain and involves dealing with abstractions to a very great extent, it seemed possible that patterns in individual ability to conceptualize might be noted on the CMT and the investigator's concept attainment test.

The test consisted of one hundred and ninety items, one hundred and fifteen synonyms-antonyms and seventy-five analogies, arranged in order of difficulty as determined by the per cent of the total standardization population who answered each item correctly.

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[1] Lewis L. Terman, Concept Mastery Test Manual, Form T, p. 10.

Norms for the CMT have been established for 2832 subjects, including ten separate groups. These included two groups of graduate students, the Stanford Gifted Study, electrical engineers and scientists, applicants for Ford Foundation fellowships, spouses of gifted subjects, undergraduate students, college graduates, applicants to public health education curriculum and Air Force captains.

Data on the validity of the CMT have been drawn from the following sources: Mean scores and standard deviations on the CMT, Form T, for subjects of the Stanford Gifted Study classified by the Binet IQ obtained in childhood, for gifted subjects and spouses of gifted subjects classified by educational level, for Air Force captains and from coefficients of correlation between CMT scores, Form T, and gradepoint averages. For sixty-six college graduates a mean of seventy-three with a standard deviation of 36.2 was obtained.[1]

Evidence of reliability was obtained by correlating the present test, Form T, with the first form, A. For one hundred and forty-eight undergraduate and graduate students and teaching assistants the relative coefficient obtained was .94.[2]

Conferences. Curtis and Andrews stated: "Student teaching is generally regarded as the most important single experience in any teacher education program."[3] The conference is a teaching technique

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[1] *Ibid.*, p. 4-8.

[2] *Ibid.*, p. 8.

[3] Dwight K. Curtis and Leonard O. Andrews, *Guiding Your Student Teacher*, p. 1.

by which teachers can guide students in order that the student teaching experience will be an effective segment of professional education preparation. Conferences serve an important purpose in evaluating a student teacher's progress. Boykin stated that "evaluation of student teaching is broader than measurement and requires the use of both quantitative and qualitative data."[1] He continued:

> Evaluation is a comprehensive, cooperatively developed, continuous process of inquiry, the findings and results of which are interpreted and defined in terms of certain principles, objectives, functions, and values. It is a part of any effort to improve, to reach a goal, or to measure gain or loss of quality.[2]

In this study one of the objectives in employing conferences was for evaluation purposes. The conference became a means of (1) planning for the student teaching experience, (2) evaluating a learning experience, and (3) evaluating individual progress. Conferences served as a means of evaluating concept attainment for it allowed the investigator to appraise change in action and behavior of the subjects. Behavioral change was one evidence of progress in the steps of concept attainment outlined by Woodruff[3] and described in Chapter II.

Conferences were held prior to the student teaching experience, during the five-week period of student teaching, and on completion of the teaching experience. During conferences the investigator became acquainted with many of the interests and with backgrounds and certain abilities of the student; goals of the student teacher were listed; the role and responsibilities of the teacher were discussed; and arrangements for the college supervisor's (the investigator) visit and observation were made.

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[1] Leander L. Boykin, "Principles of Evaluating in Student Teaching," Evaluating Student Teaching, The Thirty-Ninth Yearbook of the Association for Student Teaching, p. 20.

[2] Ibid., pp. 20-21.

[3] Ashael D. Woodruff, Basic Concepts of Teaching, p. 71.

__Behavior in the student teaching situation__. A large portion of the evidence indicating students' attainment of key concepts was derived from observation of students in the teaching situation. After Heidbreder's experiments she wrote: ". . . direct observations of events actually in progress were here available as evidence supplementary to the inferences concerning sequences of events. . . ."[1] Being able to employ concepts in meaningful ways is an important reason for the concern for their attainment.

Observing a subject's performance and noting facts of teaching procedures adopted, changes in procedure, improvements, and evidence of preplanning gave certain insights into the student's attainment of concepts. Stratemeyer and Lindsey stated that: "If you are analyzing and evaluating a teaching-learning situation, the evidence may be found in the running record of what took place during a lesson."[2]

The investigator observed each student teacher three times during the five-week off-campus experience. During the observation the investigator made written records of the student's behavior in the classroom, progress was rated on a rating scale (Appendix F), and daily plans and instructional materials were appraised. The rating scale was used to standardize observations.

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[1] Edna Heidbreder, "The Attainment of Concepts: VIII. The Concept Utilization of Verbally Indicated Instances," __Journal of Psychology__, 27:289-290, April, 1949.

[2] Florence B. Stratemeyer and Margaret Lindsey, __Working with Student Teachers__, p. 447.

II. STUDENTS' CONCEPT ATTAINMENT

Concepts are arranged here in decreasing order of emphasis in the Methods course. Concept one, _Effective and meaningful planning helps the teacher as she guides pupils toward learning objectives_, received the major emphasis of the course.

Each of the three parts of the final examination included items related to the planning process. Ninety-seven of the one hundred and thirty possible points were related directly to the planning process. Part I required the student to state a generalization about the purpose of seven selected parts of a plan for a lesson. Each generalization received two points, one point for the correct purpose (told "why" as well as "what") and one point for stating the generalization appropriately (a complete sentence without value statements). As a group the five students received a total of fifty-nine points of a possible seventy points, or eighty-four per cent. Two students received no credit (incorrect purpose and generalization stated incorrectly) for two generalizations and four students each received one point (either incorrect purpose or generalization stated incorrectly) for seven generalizations.

The generalizations on Part I in which most incompleteness was noted were concerned with the unit, the lesson problem, teaching points, guide questions, assignments, and teacher and pupil references. Two students responded inaccurately about the unit, lesson problems, and guide questions. Assignments, teacher-pupil references, and teaching points each received an inaccurate response once.

Part II consisted of fifty generalizations related to the four concepts. Seven generalizations were related to more than one of the four concepts. Students were to indicate whether the generalizations were Complete and Correct, Incomplete and/or Partly Correct, or Incorrect. Each generalization was assigned one score. Seventeen of the generalizations were related to concept one. As a group the five students scored sixty-four points out of eighty-five possible points or seventy-five per cent. Three students responded incorrectly to each of the following generalizations:

4. Learning objectives are determined with more accuracy when units are under way and pupil's needs emerge.

33. Objectives are statements of fact or condition that relate action and result.

35. The way a teacher is going to evaluate is planned early so that the pupils know what kind of tests to expect.

Two students responded incorrectly to each of the following:

14. Teacher-pupil planning for evaluation allows pupils to assist in setting goals according to their needs and encourages pupil interest.

22. Heterogeneous classrooms do not allow time and opportunity for individualized instruction.

25. The objectives for the home economics program are determined through cooperative planning by teachers, pupils, and parents.

30. Determining the objectives for a course of study is the first step in effective planning.

Each of the following generalizations was responded to incorrectly by one student:

7. The teacher sets the goals and objectives for the year's program because she has the education and experience.

11. Meaningful objectives identify both the kinds of behavior to be developed by pupils and the area of life in which this behavior is to operate.

18. The teacher sets the goals and objectives for the year's program because the pupils are not aware of their needs and are incapable of effective planning.

39. Teacher-pupil planning which allows pupils to assist in setting goals according to their needs encourages pupil interest.

Eight of the generalizations that students failed to respond to correctly were those dealing with determining objectives for learning; four with teacher-pupil planning; three with meeting individual needs; and two with evaluation. Each of these is an aspect of the planning process.

A performance record on Part II of the final examination is presented for each student in Table II. Concepts and related test items are presented in Appendix C.

TABLE II

PERFORMANCE ON PART II OF THE FINAL EXAMINATION

Major Concept	Incorrect Item Number				
	Student A	B	C	D	E
1. Effective and meaningful planning helps the teacher as she guides pupils toward learning objectives.	..	4	..	4	4
	..	..	7	..	..
	..	..	11	..	..
	14	14	..	..	..
	..	..	..	..	18
	..	..	22	22	..
	..	..	25	25	..
	30	..	30	..	..
	..	..	33	33	33
	..	..	35	35	35
	39	..	..	..	..
2. Student teaching provides an opportunity for the student teacher to begin to assume the role and responsibilities of a classroom teacher.	8	..	8	..	..
	..	..	..	12	12
	..	..	..	13	..
	34	34	34	..	..
	..	..	49	..	49
3. Programs of learning are planned to meet needs of specific pupils having a variety of individual differences.	3	3	3	..	3
	..	4	..	4	4
	..	..	7	..	..
	..	..	..	..	9
	..	25	..	25	..
	..	26	..	..	..
	..	28	..	..	..
	36	..	36	36	..
4. A variety of means may be used to evaluate pupil learning effectively.	..	6	..	..	..
	14	14	..	..	..
	16	..	..	16	..
	19	19	19	..	..
	24	..	..	..	24
	27	27	27	27	..
	..	29	29	..	..
	35	..	35	35	35
	..	40	..	..	..
	..	41	..	..	..
	..	43	..	..	..
	..	47	..	..	47

Part III of the final examination was also related to concept one. It was composed of sixty-six generalizations concerning the effective utilization of selected teaching techniques. Some were true and some were false. Each generalization was assigned one score point. As a group the five students scored 311 points of a possible three hundred and thirty points, or ninety-four per cent. Four students responded incorrectly to a total of five generalizations concerning the laboratory experience as a teaching technique. Three students failed to respond correctly to a total of five generalizations dealing with role playing and three to a total of four generalizations concerning field trips. Two students made two incorrect responses to both supervised study and programed learning. One student made one incorrect response to a generalization concerning class discussion.

During the eight-week sequence members of the experimental group evidenced visible improvement in completing assignments in which they were to prepare "lesson plans." The investigator recorded differing ability among the experimental group from student to student in completeness of plans, organization and thoroughness of planning.

Assignments completed by Student A for the class were judged as "complete" and "well done." In the student teaching experience A continued to plan in an organized manner. Observation of A early in the student teaching experience revealed, however, that she tended to ask questions that required merely factual answers. With experience she used more thought questions and led discussions which were judged more effective than at first. On the final examination, Part I, A did not state a complete generalization about the purpose of the guide questions. This would appear to indicate that A did not completely understand the purpose of guide questions. On Part II, A responded incorrectly to generalizations concerning the steps in effective planning and the role of teacher-pupil planning. This may be interpreted to indicate that while A was able to make plans which were effective in the classroom, she was not yet able to reply to test items where this skill was required. A appeared to have attained concepts in relation to utilization of a variety of teaching techniques as she made only three incorrect responses to sixty-six generalizations. A variety of learning experiences (teaching and learning techniques that involved both teacher and pupils) had been observed as they were employed by A in the student teaching experience.

Of the total ninety-seven points related to concept one, A achieved ninety-three per cent.

During the methods course Student B seldom went beyond "lesson planning" assignments in creative ways. Those she completed indicated a certain amount of initial uncertainty about the purpose of and steps in planning lessons. She apparently did not thoroughly understand the relationships between learning experiences and the lesson or guide questions. This lack of full comprehension was indicated again when the investigator observed B early in the student teaching experience. B tended to lecture to the pupils and to ask them factual questions rather than those which provoked thinking on the part of pupils. Inadequate provision seemed to be made for pupil participation or activity. In conference she indicated insecurity and asked for assistance in planning lessons and providing appropriate learning experiences for the pupils. B again indicated some lack of originality and creativity in the teaching situation as she seemed to provide little variety in learning experiences and visual material for pupils.

The investigator recorded growth in teaching effectiveness by student B as she gained self-confidence, greater skill in guiding a class discussion, and emphasizing depth in subject matter as the student teaching experience was under way.

Achievement by B on Part I of the examination appeared to indicate that B had improved in ability to plan lessons. She achieved eleven of fourteen possible points. B did not state a complete generalization or the correct purpose for the unit. She stated an incomplete generalization about the purpose of the lesson problem. Responses by B appeared to indicate she may have attained the first level of concept attainment, perception, but conceptualization had not been achieved for certain aspects of the planning process. She was able to form a mental picture of selected parts of a plan for a lesson but did not appear to have a meaningful picture which would fit into an organized and related pattern.

B responded incorrectly to two generalizations on Part II which concerned the establishment of objectives for learnings and the role of teacher-pupil planning. These responses appeared to support observations in which the investigator noted that B seldom employed teacher-pupil planning and that planning for learnings appeared short range in scope.

Results on Part III indicated that B apparently did not thoroughly understand how to utilize effectively certain teaching techniques. This was noted earlier in the limited variety of learning experiences used in planning lessons. She responded incorrectly to three generalizations concerning role playing; two in relation to programed learning; two about the laboratory experience; and one concerning class discussion.

B achieved eighty-eight per cent of the ninety-seven points possible for concept one.

During the methods course, Student C developed plans for lessons that were well organized and gave evidence of thorough planning. Her class response and assignments were complete and resourceful and showed creativeness and versatility. Planning evidenced in class assignments was rated excellent.

In the teaching situation C appeared to be well organized. A variety of learning experiences was directed by C in the lessons observed by the investigator. She guided meaningful and effective discussions through the use of questions which required thought on the part of the pupils. In conferences the investigator noted that C appeared to be able to evaluate herself and lessons she taught objectively.

While C appeared capable of organizing meaningful lessons as indicated by completed assignments and in observations by the investigator, she was not consistent in her preparation and planning. At times early in the experience C evidenced some difficulty in giving clear directions for assignments. She was able to improve with experience.

C achieved seventy-eight per cent of the possible fourteen points on Part I of the examination. She did not give an appropriate response about the purpose of teaching points or a complete response about either guide questions or teacher and pupil references. The inaccuracy in her responses seemed to indicate that C may not have reached the second level (conceptualization) in attaining a concept of "lesson planning."

C responded correctly to fifty-eight per cent of the questions about the process of planning on Part II. Each of the questions answered incorrectly was concerned with objectives; what an objective was, the purpose of objectives, and who determined objectives for a learning program. Results on this section of the test appeared to indicate C had not attained a concept of objectives and their role in the planning process.

Performance by C on Part III substantiated earlier observations of her apparent ability to utilize teaching techniques. She responded incorrectly only once to the sixty-six questions. This was in relation to the use of field trips as a learning experience.

C achieved eighty-nine per cent of the total ninety-seven points related to concept one.

Student D appeared to show steady growth during the Methods of Teaching Home Economics course and the student teaching experience. Completed assignments related to planning lessons indicated that D needed to work for thoroughness in planning. She tended to ask questions requiring factual answers and these questions sometimes did not accurately reflect the teaching points. The lesson plan form she developed and used appeared to be difficult to use successfully in the classroom situation. In observations and conferences, D indicated that planning of lessons continued to be time-consuming but in the classroom she appeared capable, well organized, and well prepared in subject matter background.

On Part I D did not give the complete purpose for the unit and for lesson problems. These responses seemed to indicate that D apparently did not completely understand the purposes of the unit and lesson problems. She did not state a complete generalization for assignments.

D responded incorrectly to four questions concerning objectives on Part II. The four questions were related to what objectives are, when objectives are determined, and who determines objectives for programs of learning. Responses by D appeared to reveal that she had achieved the first level (perception) of concept attainment but had not attained the second level (conceptualization).

On Part III of the test, D answered correctly sixty-three of the sixty-six questions. Her incorrect responses concerned the laboratory experience and field trips. An observation during the student teaching experience had revealed that D apparently had not become efficient in guiding the planning and activity of a laboratory experience. Observation was not made of D in a field trip situation.

Of the total ninety-seven points concerned with concept one D achieved eighty-nine per cent.

Assignments related to planning for lessons during the Methods of Teaching Home Economics class revealed a tendency on the part of E to pose questions requiring factual rather than thought responses. Teaching points frequently did not represent all lesson objectives. Plans for lessons developed by E in the student teaching experience showed steady improvement. E appeared to be well organized, well prepared in subject matter background, and able to guide effective discussions. On the final examination, Part I, E appeared to have attained a concept of planning for she stated a correct and complete generalization for the seven selected parts of a lesson plan.

On Part II E responded incorrectly to generalizations concerning the meaning of objectives, why the teacher guides the determination of objectives in a learning program, and when objectives are planned. Responses by E appeared to indicate that she had notattained a useful concept of objectives.

On Part III she answered sixty-two generalizations correctly and responded to four incorrectly. These were in relation to role playing, laboratory experience, field trips, and supervised study. E appeared to have attained concepts in relation to utilization of most teaching techniques.

Of the ninety-seven points concerning concept one, E correctly answered ninety-two per cent.

The experimental group achieved ninety per cent of the ninety-seven possible points relating to concept one.

Twelve generalizations on Part II were related to the second concept. Student teaching provides an opportunity for the student teacher to begin to assume the role and responsibilities of a classroom teacher. Three students responded incorrectly to the following generalization:

34. A professional attitude is the result of experience.

Two students responded incorrectly to each of the following:

8. Professional growth comes through objective self-evaluation and a professional point of view.

12. Planning and guiding learning and supervising and advising pupils are the main responsibilities of the teacher.

49. Planning and guiding learning, supervising and advising pupils, and guiding certain out-of-class activities are the main responsibilities of the teacher.

The following generalization was responded to incorrectly one time:

13. Reasons for lack of discipline when teaching is at fault are ambivalence of pupils and unsolved personal problems.

Student A appeared to become acquainted with the responsibilities of student teaching and assumed her role in an efficient manner. There was no evidence of pupil control problems in the classroom. In conference she indicated pride in her progress as a student teacher and the pupils' apparent progress. A responded incorrectly to a generalization concerning criteria for professional growth. She indicated that she felt professional growth included more than objective self-evaluation and a professional point of view and that experience was a factor in professional growth. She appeared to be somewhat uncertain about the aspects of a professional attitude.

Observation of Student B evidenced some pupil control problems such as restlessness and whispering. The pupil's behavior may have been caused because pupils had difficulty in hearing B or by the lack of variety in learning experiences. B responded correctly to generalizations concerning discipline. This would appear to indicate that B was aware of causes of pupil behavior but appeared to show some weakness in coping with the causes.

B responded incorrectly to one generalization related to concept two. She indicated that she viewed experience as a factor contributing to development of a professional attitude.

Student C assumed the role of a student teacher with efficiency but was on occasion inconsistent in completing her responsibilities as a student teacher. On occasion she failed to develop lesson plans on paper.

C responded incorrectly to three generalizations related to concept two. Two of the generalizations concerned professional growth and one concerned the responsibilities of the teacher.

Observations and test results appeared to indicate that C had not attained a clear concept of professional responsibilities in student teaching.

During conferences Student D expressed some lack of confidence in herself and her ability, but with experience in the student teaching situation the investigator recorded that D seemed to gain more confidence in her ability. Her desire "to please everyone" appeared to result in a weakness in pupil control.

D responded incorrectly to two generalizations related to concept two. These responses were concerned with the responsibilities of the teacher and reasons for lack of discipline.

Observations of D and test results seemed to indicate that she was somewhat uncertain of the full responsibilities of a teacher.

Student E appeared to become acquainted with her teaching responsibilities and handled them in an efficient manner during the student teaching experience. E responded incorrectly to two generalizations of Part II. Her responses appeared to indicate that she believed guiding out-of-class activities was not a main responsibility of the teacher.

As a group the five student teachers achieved eighty-three per cent of the possible points on Part II related to concept two.

Concept three was stated as follows: Programs of learning are planned to meet needs of specific groups of pupils having a variety of individual differences. Thirty-two per cent of Part II of the final examination (sixteen generalizations) consisted of items concerned with individual differences. Four students responded incorrectly to the following generalization:

3. Superior pupils should spend the major portion of their curricular time in college preparatory subjects.

Three students responded incorrectly to the following generalizations:

4. Learning objectives are determined with more accuracy when units are under way and pupils' needs emerge.

30. Needs and problems of adolescents are determined by environment, social custom, and rate of achievement of developmental tasks.

Two students responded incorrectly to the following generalization:

25. The objectives for the home economics program are determined through cooperative planning by teachers, pupils and parents.

The following generalizations were responded to incorrectly one time:

7. The teacher set the goals and objectives for the year's program because she has the education and experience.

9. The state's Curriculum Guide promotes and recommends uniformity of secondary home economics programs.

26. Programs of learning are planned to meet needs of specific groups of pupils having a variety of individual differences.

28. Individualized instruction is needed for effective teaching and guiding of learning with pupils of heterogeneous ability and a variety of past experiences.

The investigator noted in early observation of A in the student teaching experience some inadequacy in meeting needs of individual pupils. A responded incorrectly to two of the sixteen generalizations dealing with curriculums for pupils of varying abilities and the factors which determine individual differences. Her responses appeared to indicate that she recognized individual differences among pupils but was still somewhat unsure of how to provide for them.

The investigator recorded during observations and conferences with Student B that while she was aware of a wide difference in abilities of pupils little provision was made for these differences as assignments were developed. B responded incorrectly to four generalizations concerned with curriculums for pupils with varying abilities, considering individual differences when planning programs of learning, and the role of individualized instruction. These performances seemed to indicate that B appeared not to have attained a clear or useful concept of provision for individual differences.

An awareness of individual differences by Student C was recorded by the investigator during observations and conferences with C. Her apparent interest as evidenced by comments and teaching procedures appeared to indicate that C was aware of individual needs and was attempting to provide for them. She attempted to plan learnings related to needs of specific pupils. Generalizations on Part II answered correctly appeared to substantiate these observations. C responded incorrectly to four items concerning causes of individual differences, determining objectives for a program of learning, and curriculums for superior pupils. These responses appeared to indicate C was aware of problems related to individual differences but was unsure about providing for them.

During observations in the student teaching experience the investigator noted that Student D was familiar with many of the pupils' activities and interests. In class discussions she attempted to include all pupils. D responded incorrectly to three generalizations on Part II of the final examination related to factors about individual differences and determining objectives for a program of learning. Performance by D in the student teaching experience and on the test appeared to indicate her awareness of individual differences, an attempt to provide for them, but a certain amount of unsureness about the causes for individual differences.

Observations of and conferences with Student E appeared to indicate that she was aware of individual differences and attempted to provide for pupil differences through individualized assignments. The supervising teacher working with E in the student teaching experience rated E's ability to guide experiences for pupils of varying abilities as excellent. E responded incorrectly to three generalizations on Part II. These generalizations pertained to curriculums for superior pupils, the purpose for a state Curriculum Guide, and determining objectives for a program of learning. Performance on Part II by E appeared to indicate that she had attained the concept of individual differences but was still somewhat limited in making provisions for them.

As a group, the five pupils responded correctly to eighty per cent of the generalizations related to individual differences.

Twelve generalizations of Part II of the final examination were related to concept four, A variety of means may be used to evaluate pupil learnings effectively. The five students responded correctly to fifty-seven per cent of these items. Each of the generalizations was responded to incorrectly at least one time. Four students responded incorrectly to the following generalizations:

27. Effective tests evaluate how much the pupil has learned.

35. The way a teacher is going to evaluate is planned early so that the pupils know what kind of tests to expect.

Three students responded incorrectly to the following generalization:

19. Test results show how much a pupil has learned.

Each of the following generalizations was responded to incorrectly by two students:

14. Teacher-pupil planning for evaluation allows pupils to assist in setting goals according to their needs and encourages pupil interest.

16. Effective evaluation tells what kind of learning has taken place, is continuous, and planned by the teacher.

24. Grades from well-constructed and effective tests are the criteria for interpreting learning results.

29. Effective evaluation tells how much and what kind of learning has taken place, is consistent and continuous, and is planned by the teacher.

43. Effective tests measure how much the pupil has learned about critical points of learning.

47. Evaluation is planned early so that teachers can evaluate the effectiveness of their teaching.

The following generalizations were responded to incorrectly by one student each:

6. Effective tests evaluate an efficiency in a skill and the amount of learning which has taken place.

40. Effective tests allow the pupil to show evidence of attainment of important learning goals.

41. Evaluation is planned early and is continuous throughout the learning experience.

Student A responded correctly to forty-two per cent of the generalizations related to evaluation of learning. The errors which A made concerned the purpose of teacher planning, teacher-pupil planning of evaluation, the criteria for effective evaluation, what test results how, and what grades indicate.

Student B responded correctly to twenty-five per cent of the generalizations concerning evaluation. Common errors made by B were in relation to the criteria for effective evaluation, measurement by testing, how tests are used in evaluation, what test results and grades may indicate, and the purpose of teacher planning and pupil-teacher planning of evaluation.

Student C responded correctly to sixty-seven per cent of the twelve generalizations related to concept four. Her incorrect responses concerned what test results indicate, the criteria for effective evaluation, measurement by testing, and teacher planning for evaluation.

Student D and Student E each achieved seventy-five per cent of the correct responses. Both D and E responded incorrectly to the generalization concerning teacher planning of evaluation. The other two generalizations erroneously responded to by D were related to the criteria for effective evaluation and measurement by testing, while E did not respond correctly to generalizations concerned with what grades indicate and planning for evaluation.

As a group the five student teachers responded correctly to fifty-seven per cent of the generalizations related to concept four. They appeared to have reached the first level (preception) in attaining a concept. They seemed to be somewhat uncertain about the use of test results, the distinction between measuring and evaluating, and the criteria for evaluation.

Supervising teachers evaluated student teachers during and at the close of the off-campus experience by using a rating sheet (Appendix E). One area rated by the supervising teacher was the student teacher's ability to make and use tests effectively. Students A, B, C, and E were rated "strong;" D was rated as "average" by the supervising teachers.

The investigator did not observe the student teachers administering tests. In conferences with the investigator A indicated, by comments, an awareness of pupils' growth and progress toward goals. B appeared somewhat uncertain about providing situations for daily evaluation of pupils. She did not show evidence of having set standards by which to judge progress of pupils. C appeared aware of pupils' growth and appeared able to evaluate her own growth as well as the pupils' progress. D appeared hesitant and somewhat uncertain in evaluating growth of pupils. She appeared primarily concerned with the "process of planning and teaching." E appeared concerned about individual and group progress and noted pupil progress daily.

In general, students appeared uncertain about several aspects relating to evaluation of learning. These included the construction of tests, use of test results, and providing daily situations for evaluation.

Points scored by the five students on the final Methods of Teaching Home Economics examination are presented in Table III.

TABLE III

SCORES ON THE FINAL EXAMINATION

Student	Part I	Part II	Part III	Total Score
A	13	37	63	113
B	11	36	58	105
C	10	35	65	110
D	11	40	63	114
E	14	40	62	116
Individual Points Possible	14	50	66	130
Group Points Possible	70	250	330	650

As a group the five students achieved eighty-four per cent of the points possible on Part I, seventy-five per cent on Part II, and ninety-four per cent on Part III.

As will be noted in Table III, Student E achieved the highest score on the final examination. She was also rated as the most alert and responsive of the experimental group during the methods course.

She participated frequently and made thoughtful and meaningful contributions. In the student teaching experience the lessons she guided were thoroughly planned, concerned pertinent material, and appeared to be effectively taught.

Student B achieved the lowest score on the final examination. During the methods course she responded infrequently. Her assignments tended to be incomplete but she arranged extra conferences in order to understand and complete assignments. During the student teaching experience improvement was noted but the process of improvement tended to be slow. She evidenced little creativity in presenting lessons.

Table IV presents comparison of scores achieved on CMT with those achieved on the final methods examination by students in the experimental group.

TABLE IV

COMPARISON OF SCORES ON CONCEPT MASTERY TEST
WITH THOSE ATTAINED ON FINAL METHODS EXAMINATION

Student	Concept Mastery Test			Final Methods Examination
	Part I[1]	Part II[2]	CMT Total Score	Total Score
A	24	40	64	113
B	17	17	34	105
C	29	39	68	110
D	16	24	40	114
E	39	45	84	116
Total Score Possible	115	75	190	130

[1] Synonyms-Antonyms

[2] Analogies

A comparison of the CMT scores achieved by the experimental group with scores achieved on the Methods of Teaching Home Economics examination show that Student E received the highest score on each and Student B the lowest on each. These results indicate that there may be a certain amount of validity in the investigator's test instrument.

CHAPTER V

SUMMARY AND RECOMMENDATIONS

I. SUMMARY

The "concept approach" to learning has been recognized as a way of identifying, organizing, structuring, and unifying significant subject matter content or major ideas in a field. The primary goal of education is to equip students to meet effectively new situations as they are encountered in life. By recalling and applying major ideas and processes from previous experiences and learning, the problems in new situations may be met and solved successfully. Learning then becomes a means of preparing for the future.

Effective identification of concepts by students can assist in meaningful learning in any course or field. When students and teachers identify and understand significant ideas in a body of knowledge, ability to apply principles, to build or develop depth and breadth, and to use knowledge effectively is made possible.

The Problem. The problem in this study was one of identification of basic concepts and students' attainment of these concepts during a segment of the professional education sequence in the senior year. The purposes in this study were (1) to identify basic concepts for a beginning course in home economics education and (2) to assess students' awareness of basic concepts and their ability to use concepts and related generalizations during and immediately following the student teaching experience.

Procedure. A review of literature guided the investigator in gaining an understanding of the nature and role of concepts and concept attainment, and provided a basis for the development of the study. The investigator identified the major concepts from the Methods of Teaching Home Economics course through observations of the class each of the four times it was taught during the school year 1962-63.

The experimental group in this study consisted of the entire group of five student teachers assigned to the investigator during the second half of the Spring semester of 1963 and for whom she served as college supervisor. An attempt was made by the assigner of student teachers to assign to the investigator a representative sample of student teachers based on information known about students at the time assignments were made.

Student teachers' attainment of the concepts and related generalizations were evaluated with a paper and pencil test developed by the investigator and administered at the close of the student teaching experience as the final written examination in the Methods of Teaching Home Economics course. Other methods of evaluation included observations when visits were made to each of the five students in the experimental group while they were engaged in the student teaching experience; conferences before, during, and after the student teaching experience; assignments completed by students; and administration of the Terman Concept Mastery Test.

Major findings. Major concepts identified by the investigator in the Methods of Teaching Home Economics course were arranged in order of decreasing emphasis in the course: (1) Effective and meaningful planning helps the teacher as she guides pupils toward learning objectives; (2) Student teaching provides an opportunity for the student teacher to begin to assume the role and responsibilities of a classroom teacher; (3) Programs of learning are planned to meet needs of specific groups of pupils having a variety of individual differences; and (4) A variety of means may be used to evaluate pupil learnings effectively.

Students received the highest test score on items related to concept one. Scores achieved on other concepts by the experimental group feel in the following order: concept two, concept three, and concept four.

A greater degree of concept attainment was noted, as measured by the test, in areas which received the major emphases in the course. Students appeared to have attained concept one, Effective and meaningful planning helps the teacher as she guides pupils toward learning objectives.

The experimental group responded correctly to eighty-four per cent of the generalizations about selected parts of a plan for a lesson on Part I of the test. The lesson problem, approach, teaching points, guide questions, assignments, and teacher and pupil references were responded to correctly and completely and appeared to be attained by eighty per cent of the experimental group.

Generalizations on Part II that related to concept one which were answered correctly by all students in the experimental group and which appeared to have been realized by the experimental group were as follows:

5. Programs of learning are planned to meet needs of specific homogeneous groups of pupils.

11. Meaningful objectives identify both the kinds of behavior to be developed by pupils and the area of life in which this behavior is to operate.

15. Determining objectives for a course of study is secondary to selecting the unit titles and lesson problems.

17. Ability to generalize allows individuals to relate past experiences to new situations.

20. The process of lesson planning helps the teacher as she guides pupils toward learning objectives.

39. Teacher-pupil planning which allows pupils to assist in setting goals according to their needs encourages pupil interest.

46. The ability to generalize involves the ability to analyze past experiences and to infer to future situations.

Generalizations responded to correctly by four of the five students were as follows:

7. The teacher sets the goals and objectives for the year's program because she has the education and experience.

11. Meaningful objectives identify both the kinds of behavior to be developed by pupils and the area of life in which this behavior is to operate.

18. The teacher sets the goals and objectives for the year's program because the pupils are not aware of their needs and are incapable of effective planning.

39. Teacher-pupil planning which allows pupils to assist in setting goals according to their needs encourages pupil interest.

Part III was composed of sixty-six generalizations relating to effective use of selected teaching techniques. The experimental group achieved ninety-four per cent of the possible points. As measured by the test the five students as a group attained fifty-five of the sixty-six generalizations related to concept one.

During the eight-week student teaching experience members of the experimental group evidenced visible improvement in preparing and presenting lessons. Differing ability from student to student among the experimental group was recorded by the investigator in completeness of plans, organization, and thoroughness of planning. The experimental group reported that they used ten different teaching techniques during the student teaching experience.

As measured by the test, students appeared able to use eighty-three per cent of the generalizations related to concept two, _Student teaching provides an opportunity for the student to begin to assume the role and responsibilities of a classroom teacher_.

Part I and III of the test included no items directly related to concept two. Generalizations on Part II related to concept two which were answered correctly by all students in the experimental group and appeared to be useful to students were as follows:

2. Student teaching provides an opportunity for the student teacher to begin to assume the role and responsibilities of a classroom teacher.

10. Although all secondary home economics programs have elements of similarity, learnings vary within certain limits from school to school.

23. Student teaching equips the student teacher with sufficient experience to be a successful teacher.

32. Teaching which sets impossible standards and does not aid the pupil in solving his own felt difficulties causes restlessness and misconduct in pupils.

44. Discipline problems are the results of poor teaching.

45. Experiences with pupils in out-of-school class activities help to guide the teacher in planning for learning in the classroom.

48. A knowledge of the content and development of home economics programs is basic to an intelligent understanding and interpretation of the home economics program.

Four of the five student teachers responded correctly to the following generalization:

13. Reasons for lack of discipline when teaching is at fault are ambivalence of pupils and unsolved personal problems.

The investigator recorded that the experimental group appeared aware of and adequately assumed their roles and responsibilities as student teachers.

As measured by the test, eighty per cent of the generalizations that were related to concept three, Programs of learning are planned to meet needs of specific groups of pupils having a variety of individual differences, appeared to be used correctly by the experimental group.

Part I and III of the test included no items directly related to concept three. Generalizations on Part II related to concept three which were answered correctly by all students in the experimental group were as follows:

1. Intellectual competence accounts for the individual differences among pupils in a classroom.

5. Programs of learning are planned to meet needs of specific homogeneous groups.

10. Although all secondary home economics programs have elements of similarity, learnings vary within certain limits from school to school.

21. Heterogeneous classrooms do not allow time and opportunity for individualized instruction.

31. Previous experiences and intellectual, social, economic, and environmental variance contributes to differences in learning.

37. Individualized instruction is needed most when pupils are of homogeneous ability and have similar past experiences.

38. Individualized instruction can be achieved in heterogeneous classrooms.

50. The state's Curriculum Guide suggests resource materials which teachers may use to plan homemaking programs in a variety of situations.

The following generalizations were responded to correctly by four of the five student teachers:

7. The teacher sets the goals and objectives for the year's program because she has the education and experience.

9. The state's Curriculum Guide promotes and recommends uniformity of secondary home economics programs.

26. Programs of learning are planned to meet needs of specific groups of pupils having a variety of individual differences.

28. Individualized instruction is needed for effective teaching and guiding of learning with pupils of heterogeneous ability and a variety of past experiences.

The investigator recorded that the experimental group appeared to recognize individual differences and evidenced improvement in providing for individual needs and abilities during the student teaching experience.

As measured by the test, fifty-seven per cent of the generalizations related to concept four, A variety of means may be used to evaluate pupil learnings effectively, appeared to have been attained by the experimental group.

The investigator recorded improvement in students' ability to recognize situations for evaluation in daily classes. The experimental group was rated by supervising teachers as "strong" (four students) or "average" (one student) in ability to make and use tests effectively.

II. RECOMMENDATIONS

Findings have been interpreted with an awareness of certain limitations of the study. Recommendations resulting from this study may provide assistance to teachers as they plan for effective student learnings. Concept attainment may be a goal for pupils in a high school class as well as for students in a college situation.

Recommendations presented here have been grouped into four categories: (1) Methods course, (2) Student teaching, (3) Professional education curriculum, and (4) Further research.

Methods course.

1. Findings presented here may have value for the teacher of this methods course as she plans for the future. Certain observed needs of students and relative strengths observed in students may be utilized as course revisions are implemented.

a. An increased number of hours of contact time with students in the methods course would give students more opportunity to work with materials and might result in increased skills in areas related to student teaching performance.

b. Increased time and emphasis on learnings related to the concept of effective use of evaluation may aid students in attaining a more effective and useful concept of evaluation.

2. Findings of this study may have application for teachers of other methods courses in home economics. While it is recognized that all methods courses are not the same, basic concepts might appropriately be identified and concept attainment might become a desired objective for learning.

Student Teaching.

1. More frequent observations of student teachers and increased opportunity for conferences with students while they are engaged in the student teaching experience might allow for improved guidance of students during this professional experience.

2. Certain revisions of the Student Teaching Handbook for Home Economics may be desirable in view of other recommendations made here. One such revision which appears to be needed is in relation to the final evaluation form for student teachers. This form might provide increased opportunity for supervising teachers to assess evaluation skills of student teachers.

3. Increased opportunity to guide supervising teachers in their important roles in the student teaching experience might increase their

proficiency as directors of learning.

a. A workshop, seminar, or regular conference sessions during which college supervisors and supervising teachers could meet for this purpose might appropriately become a part of the professional education sequence. Because of the high turnover of home economics teachers (the average tenure of a home economics teacher in the United States is under two years), there is a certain inherent lack of uniformity in the professional preparation of supervising teachers. Frequent and regular conference or seminar sessions would appear to be needed as teachers assume initial rôles as supervisors of student teachers.

b. A handbook for supervising teachers might be developed to provide pertinent information about responsibilities of the classroom teacher and to assist in guiding supervising teachers in their roles as directors of learning.

Professional educational curriculum.

1. The professional education curriculum might appropriately be expanded or revised to include further learnings in measurement and evaluation procedures in the educational sequence of students. Additional learnings might be incorporated in the Methods course, in the educational psychology area, or in a separate course in evaluation.

2. One desirable outcome of a professional education program is a felt need to continue one's education and to grow in professional competency. Students are probably never fully prepared to teach when

they enter the teaching profession. Encouraging students and teachers to continue their education would appear to strengthen and improve the entire educational system as it would aid in frequent self-evaluation and exposure to trends and new developments in subject matter and teaching techniques and new knowledge of the learning process itself. These opportunities might result in more adequate attainment of concepts related to teaching and learning and in the teacher's ability to use conceptual learning in appropriate professional ways.

Further research.

1. If the concept approach to learning has merit, high school and other college courses could be planned and taught in this manner. Early experience with concepts and development of a conceptual framework by students might result in increased depth of understanding and make later learnings more meaningful than at present.

2. If a test instrument such as that used in this study appears to be a desirable and useful means of assessing concept attainment, further work on validation and refinement would be suitable. Certain inadequacies in the instrument are recognized. It is recognized by the investigator only as an initial attempt to measure concept attainment.

3. A follow-up study of student teachers after they have assumed full-time teaching responsibilities might reveal further information concerning concept attainment and the ability to use concepts in the learning situation.

4. If course revisions are made, in view of findings from this study, a similar type of study might be made during the next school year to assess basic concepts and concept attainment with another group of students in relation to the revised course.

5. A similar study with a larger population might help to establish norms and might aid in ascertaining reliability of the investigator's test instrument.

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APPENDICES

APPENDIX A

Name________________________

METHODS OF TEACHING HOME ECONOMICS

EXAMINATION

Part I

State a generalization about the purpose of each of the following parts of a plan for a lesson. Write the generalization in the space provided.

1. The Unit:

2. Lesson Problem:

3. Approach:

4. Teaching Points:

5. Guide Questions:

6. Assignment for Next Day:

7. Teacher References and Pupil References:

Name_______________

Part II

This part of the examination is based on key concepts of home economics education. Indicate what you believe about each concept by blacking out the letter which describes the statement best. Respond to all statements.

A Complete and Correct
B Incomplete and/or Partly Correct
C Incorrect

A B C 1. Intellectual competence accounts for the individual differences among pupils in a classroom.

A B C 2. Student teaching provides an opportunity for the student teacher to begin to assume the role and responsibilities of a classroom teacher.

A B C 3. Superior pupils should spend the major portion of their curricular time in college preparatory subjects.

A B C 4. Learning objectives are determined with more accuracy when units are under way and pupil's needs emerge.

A B C 5. Programs of learning are planned to meet needs of specific homogeneous groups of pupils.

A B C 6. Effective tests evaluate an efficiency in a skill and the amount of learning which has taken place.

A B C 7. The teacher sets the goals and objectives for the year's program because she has the education and experience.

A B C 8. Professional growth comes through objective self evaluation and a professional point of view.

A B C 9. The state's Curriculum Guide promotes and recommends uniformity of secondary home economics programs.

A B C 10. Although all secondary home economics programs have elements of similarity, learnings vary within certain limits from school to school.

A B C 11. Meaningful objectives identify both the kinds of behavior to be developed by pupils and the area of life in which this behavior is to operate.

A Complete and Correct
B Incomplete and/or Partly Correct
C Incorrect

A B C 12. Planning and guiding learning and supervising and advising pupils are the main responsibilities of the teacher.

A B C 13. Reasons for lack of discipline when teaching is at fault are ambivalence of pupils and unsolved personal problems.

A B C 14. Teacher-pupil planning for evaluation allows pupils to assist in setting goals according to their needs and encourages pupil interest.

A B C 15. Determining objectives for a course of study is secondary to selecting the unit titles and lesson problems.

A B C 16. Effective evaluation tells what kind of learning has taken place, is continuous, and planned by the teacher.

A B C 17. Ability to generalize allows individuals to relate past experiences to new situations.

A B C 18. The teacher sets the goals and objectives for the year's program because the pupils are not aware of their needs and are incapable of effective planning.

A B C 19. Test results show how much a pupil has learned.

A B C 20. The process of lesson planning helps the teacher as she guides pupils toward learning objectives.

A B C 21. Heterogeneous classrooms do not allow time and opportunity for individualized instruction.

A B C 22. Meaningful objectives identify the kinds of behavior to be developed by the pupils.

A B C 23. Student teaching equips the student teacher with sufficient experience to be a successful teacher.

A B C 24. Grades from well constructed and effective tests are the criteria for interpreting learning results.

A B C 25. The objectives for the home economics program are determined through cooperative planning by teachers, pupils, and parents.

A Complete and Correct
B Incomplete and/or Partly Correct
C Incorrect

A B C 26. Programs of learning are planned to meet needs of specific groups of pupils having a variety of individual differences.

A B C 27. Effective tests evaluate how much the pupil has learned.

A B C 28. Individualized instruction is needed for effective teaching and guiding of learning with pupils of heterogeneous ability and a variety of past experiences.

A B C 29. Effective evaluation tells how much and what kind of learning has taken place, is consistent and continuous, and is planned by the teacher.

A B C 30. Determining the objective for a course of study is the first step in effective planning.

A B C 31. Previous experiences and intellectual, social, economic, and environmental variance contributes to differences in learning.

A B C 32. Teaching which sets impossible standards and does not aid the pupil in solving his own felt difficulties causes restlessness and misconduct in pupils.

A B C 33. Objectives are statements of fact or condition that relate action and result.

A B C 34. A professional attitude is the result of experience.

A B C 35. The way a teacher is going to evaluate is planned early so that the pupils know what kind of tests to expect.

A B C 36. Needs and problems of adolescents are determined by environment, social custom, and rate of achievement of developmental tasks.

A B C 37. Individualized instruction is needed most when pupils are of homogeneous ability and have similar past experiences.

A B C 38. Individualized instruction can be achieved in heterogeneous classrooms.

A Complete and Correct
B Incomplete and/or Partly Correct
C Incorrect

A B C 39. Teacher-pupil planning which allows pupils to assist in setting goals according to their needs encourages pupil interest.

A B C 40. Effective tests allow the pupil to show evidence of attainment of important learning goals.

A B C 41. Evaluation is planned early and is continuous throughout the learning experience.

A B C 42. The ability to summarize allows individuals to correlate or organize main points in a comprehensive manner.

A B C 43. Effective tests measure how much the pupil has learned about critical points of learning.

A B C 44. Discipline problems are the results of poor teaching.

A B C 45. Experiences with pupils in out-of-school class activities help to guide the teacher in planning for learning in the classroom.

A B C 46. The ability to generalize involves the ability to analyze past experiences and to infer to future situations.

A B C 47. Evaluation is planned early so that teachers can evaluate the effectiveness of their teaching.

A B C 48. A knowledge of the content and development of home economics programs is basic to an intelligent understanding and interpretation of the home economics program.

A B C 49. Planning and guiding learning, supervising and advising pupils, and guiding certain out-of-class activities are the main responsibilities of the teacher.

A B C 50. The state's Curriculum Guide suggests resource materials which teachers may use to plan homemaking programs in a variety of situations.

Name______________________________

Part III

This part of the examination consists of generalizations about the effective utilization of certain teaching techniques. Indicate whether each statement is true or false by blacking out T or F. Respond to all statements.

Teaching Technique   Generalization

Class Discussion

T F 1. is used when a total group needs to deliberate ideas.

T F 2. involves interaction carried on in a group.

T F 3. is a question and answer session.

T F 4. keeps individuals thinking together as a group.

T F 5. is flexible but keeps specific ideas or points in mind.

T F 6. is teacher dominated.

T F 7. is guided by a leader.

T F 8. is summarized from time to time to aid in ascertaining accomplishments.

T F 9. is highly structured.

T F 10. stimulates creative thinking.

The Resource Person

T F 1. can be useful in stimulating interest and motivating pupils.

T F 2. can hardly be over-used.

T F 3. requires no special teacher-organization.

T F 4. contributes ideas and viewpoints of an expert, sometimes not found in print.

Role Playing

T F 1. is spontaneous acting out of a situation.

T F 2. is activity to reconcile differences of opinion.

T F 3. aids participants in gaining insight into problems of human relations.

T F 4. helps pupils look objectively at their own and others' behavior.

T F 5. allows time for extensive preparation.

T F 6. is stopped while interest and participation is still high.

T F 7. is activity to identify differences of opinion.

T F 8. interests both participants and observers.

T F 9. is an effective learning method for pupils who fail to think quickly and are unable to express themselves.

T F 10. may aid in developing initiative on the part of participants.

Supervised Study

T F 1. requires a minimum of planning.

T F 2. is used when resources are scarce.

T F 3. is needed most when pupils do homework effectively.

T F 4. is used for individual and group assignments.

T F 5. is used when the search for information on a topic needs guidance.

T F 6. allows the teacher to guide each pupil in his work.

T F 7. helps pupils acquire individual skills and work methods.

T F 8. meets varying needs and interests of pupils.

Programed Learning

T F 1. provides for immediate reinforcement.

T F 2. is unlimited in use in most subject matter fields.

T F 3. is a fusion of learning and testing through a series of questions and answers.

T F 4. increases productivity of both teacher and pupils when groups are small and of homogeneous ability.

T F 5. allows each pupil to progress at his own pace.

T F 6. encourages dishonesty on the part of pupils.

T F 7. techniques are unlimited in the type of learning experiences offered.

T F 8. breaks up material into small, simple steps and arranges them into a logical, cumulative order.

T F 9. does not allow pupil to know whether his answer is right or wrong until he completes a series.

T F 10. provides the teacher freedom to devote time to individual pupils.

The Demonstration

T F 1. is an aid in developing a standard of work by showing.

T F 2. is an aid in clarifying verbal explanations.

T F 3. consists of three parts; preparatory (introduction), the actual demonstration, and follow-up (summary).

T F 4. is a method used successfully mainly with the superior student.

T F 5. allows a great variety of subjects to be covered in a short time.

T F 6. allows for both verbal and visual clarification.

Laboratory Experience

T F 1. provides practical application of principles and methods.

T F 2. allows large groups of pupils to work effectively.

T F 3. is an inexpensive method of emphasizing learnings.

T F 4. is closely related to the unit being studied.

T F 5. provides little opportunity to correct pupils' mistakes when they make them.

T F 6. gives opportunity to develop skill under guidance.

T F 7. consists of three parts: planning, activity, and evaluation.

T F 8. requires lesson objectives and thorough planning by teacher and pupils.

The Field Trip

T F 1. is a planned visit to points outside the regular classroom.

T F 2. allows pupils to see things as they actually are.

T F 3. requires quick thinking and the ability to ask clear, concise questions.

T F 4. brings school and community programs into closer relationship.

T F 5. may be an effective method to introduce a new lesson.

T F 6. requires standards for safety and behavior to be set up with pupils.

T F 7. requires little preparation.

T F 8. may be an effective method to summarize and close a unit.

T F 9. works into class schedules easily.

T F 10. may require the school administrator's consent.

APPENDIX B

Kansas State University

Manhattan, Kansas

Department of Education
Holton Hall

May 20, 1963

Dear

Enclosed please find the multiple choice section of the Methods of Teaching Home Economics Examination. The examination has been keyed. Would you please indicate whether you agree or disagree with the key by placing an "a" or a "d" by the number of the concept. Please check the wording of the concepts for understanding and whether or not the concepts are clearly expressed. Feel free to write your comments on the examination sheet.

Sincerely,

Lovell Hunziger
Graduate Student

APPENDIX C

CONCEPTS AND RELATED TEST ITEM NUMBERS

	Major Concepts	Part I	Part II		Part III
1.	Effective and meaningful planning helps the teacher as she guides pupils toward learning objectives.	(All Items)	4 5 7 11 14 15 17 18 20	22 25 30 33 35 39 42 46	(All Items)
2.	Student teaching provides an opportunity for the student teacher to begin to assume the role and responsibilities of a classroom teacher.	(No Items)	2 8 10 12 13 23 32	34 44 45 48 49	(No Items)
3.	Programs of learning are planned to meet needs of specific pupils having a variety of individual differences.	(No Items)	1 3 4 5 7 9 10 21	25 26 28 31 36 37 38 50	(No Items)
4.	A variety of means may be used to evaluate pupil learning effectively.	(No Items)	6 14 16 19 24 27	29 35 40 41 43 47	(No Items)

APPENDIX D

CONCEPT MASTERY TEST

Form T

Lewis M. Terman

Your answers are to be recorded on a special answer sheet. Please do not make any marks on this test blank. Fill out the heading on the answer sheet before starting the test.

PART I. SYNONYMS AND ANTONYMS

Directions: This test is made up of pairs of words which have either the same or opposite meaning. If two words mean the same or nearly the same, mark the space under S on the answer sheet; if two words mean the **opposite** or nearly the opposite, mark the space under **O** on the answer sheet.

For example: In item A below, "hot" and "cold" mean the opposite; so in line A under EXAMPLES, Part I on the answer sheet, the space under **O** should be blackened.

In item B below, "big" and "large" mean the same, so in line B of the answer sheet the space under S should be blackened.

Be sure that the space you mark on the answer sheet is numbered the same as the question you are answering. **Do not mark the test blank.** Omit those items that you could answer only by pure guess, but answer all you *think* you know, even if you are not quite certain. Do not study long over any pair.

A. hot........................cold
B. big........................large

1. rigid....................flexible
2. competent..........qualified
3. haven..................refuge
4. cheap...................priceless
5. tangled..............entangled

6. admiration........esteem
7. steep....................precipitous
8. elated.................depressed
9. choice..................option
10. impediment.......obstacle

11. relinquish..........retain
12. submissive........domineering
13. brisk....................dilatory
14. chasm..................abyss
15. flaunt..................conceal

16. squeamish.........qualmish
17. awkward...........dexterous
18. taut......................flaccid
19. assuage..............alleviate
20. dynamic.............static

21. curtail................abridge
22. dearth.................scarcity
23. cognizant..........unaware
24. callow.................mature
25. adroit..................clumsy

26. abeyance...........suspension
27. discernible.........imperceptible
28. importune.........entreat
29. protest................acquiesce
30. offend.................placate

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31. ineffective..........cogent
32. blatant..............vociferous
33. paucity..............profusion
34. ameliorate.........aggravate
35. acme....................zenith

36. demeanor...........bearing
37. quell....................subdue
38. profuse..............abundant
39. intractable.........docile
40. rescind...............abrogate

41. prodigal.............parsimonious
42. succinct.............verbose
43. laconic...............loquacious
44. primeval............primordial
45. affront...............conciliate

46. ominous.............auspicious
47. antipathy...........affinity
48. rife......................abounding
49. contravene.........sustain
50. bucolic...............rustic

51. effrontery..........diffidence
52. vapid..................zestful
53. fatuous..............inane
54. sanguine............pessimistic
55. sycophant..........parasite

56. raillery..............badinage
57. sagacity.............fatuity
58. subjugate...........capitulate
59. perspicuous.......obscure
60. redolent.............fragrant

61. concomitant......synchronous
62. factious.............peaceful
63. archetype...........prototype
64. presage..............portend
65. redoubtable.......feeble

66. splenetic............rancorous
67. cursory..............desultory
68. crass...................gross
69. mordant.............mild
70. salubrious.........wholesome

71. recalcitrant.......refractory
72. temerity.............timidity
73. bootless.............vain
74. inchoate.............rudimentary
75. chicanery...........probity

76. spoliation.......... despoliation
77. obloquy...............ignominy
78. denunciation.....philippic
79. pertinent............apposite
80. baneful...............baleful

81. condign..............undeserved
82. traduce..............vilify
83. ratiocination.....intuition
84. calumniate.........laud
85. phlegmatic........irascible

86. evanescent.........abiding
87. argot...................jargon
88. perfunctory.......meticulous
89. pique..................umbrage
90. affirm.................gainsay

91. venial.................inexpiable
92. descant...............expatiate
93. expert.................tyro
94. scurrilous...........opprobrious
95. espy.....................descry

96. limn.....................delineate
97. periphrastic......succinct
98. bowdlerize.........expurgate
99. putative.............certain
100. terse....................prolix

101. confute...............refute
102. contumacious...fractious
103. pusillanimous..intrepid
104. sophistry...........casuistry
105. recreant.............apostate

106. miasma...............effluvium
107. proscribe...........ostracize
108. sempiternal......ephemeral
109. palliate...............extenuate
110. surfeit................stint

111. abstruse.............recondite
112. termagant.........virago
113. imprecate..........execrate
114. disingenuous....artless
115. transilient.........saltatory

PART II. ANALOGIES

Directions: Each line in this test can be made a true statement by using one of the three responses in parentheses.

For example: Item X below is read, "Shoe is to Foot as Glove is to (*a.* Arm *b.* Elbow *c.* Hand)."

The correct answer is Hand, because Hand is related to Glove as Foot is related to Shoe. Under EXAMPLES, Part II of the answer sheet, line X, blacken the space under **c** to show that choice *c* (Hand) is the correct answer.

In item Y below, the correct answer is *b* (Cow), so the space under **b** in line Y of the answer sheet should be blackened.

Read each line and decide which one of the three responses is correct, *a*, *b* or *c*, and mark the space under the corresponding letter on the answer sheet. Be sure for each item that the line on the answer sheet is numbered the same as the question you are answering. Omit those that you would have to answer by pure guess.

X. Shoe : Foot :: Glove : (*a.* Arm *b.* Elbow *c.* Hand)
Y. Kitten : Cat :: Calf : (*a.* Horse *b.* Cow *c.* Lion)

1. Ocean : Pond :: Deep : (*a.* Shallow *b.* Well *c.* Sea)
2. Many : Few :: Often : (*a.* Frequent *b.* Seldom *c.* Never)
3. Scissors : Cloth :: Scythe : (*a.* Wood b. Steel *c.* Grass)
4. Fore : Aft :: Bow : (*a.* Deck *b.* Boat *c.* Stern)
5. Circle : Square :: Sphere : (*a.* Geometry *b.* Cube *c.* Ball)

6. Melted : Frozen :: Liquid : (*a.* Soft *b.* Water *c.* Solid)
7. Order : Confusion :: Peace : (*a.* Treaty *b.* Enemy *c.* War)
8. Most : Least :: Best : (*a.* Good *b.* Worst *c.* Poor)
9. Framework : House :: Skeleton : (*a.* Body *b.* Bones *c.* Skull)
10. Wise : Foolish :: Vain : (*a.* Modest *b.* Pretty *c.* Conceited)

11. Aspen : Tree :: Armadillo : (*a.* Dagger *b.* Animal *c.* Shrub)
12. Antlers : Deer :: Antennae : (*a.* Amoeba *b.* Starfish *c.* Grasshopper)
13. Love : Caress :: Anger : (*a.* Strike *b.* Patience *c.* Temper)
14. File : Style :: Fight : (*a.* Enemy *b.* Quarrel *c.* Spite)
15. Whitney : Cotton gin :: Edison : (*a.* Motion picture *b.* Telephone *c.* X-ray)

16. Harrow : Cultivation :: Dray : (*a.* Painting *b.* Hauling *c.* Plumbing)
17. Enough : Excess :: Sufficiency : (*a.* Surplus *b.* Adequacy *c.* Competency)
18. North : South :: Northeast : (*a.* Southwest *b.* Southeast *c.* Northwest)
19. Cat : Carnivorous :: Pony : (*a.* Horse *b.* Herbivorous *c.* Ruminant)
20. Sugar : Meat :: Carbohydrates : (*a.* Proteins *b.* Fats *c.* Vitamins)

21. Newton : Calculus :: Copernicus : (*a.* Geography *b.* Archaeology *c.* Astronomy)
22. Mexico : North America :: Rhodesia : (*a.* Australia *b.* Africa *c.* Europe)
23. Cornea : Eye :: Cochlea : (*a.* Spine *b.* Heart *c.* Ear)
24. Square of 1 : Square of 2 :: 1 : (*a.* 2 *b.* 4 *c.* 8)
25. Backward : Forward :: Ancestry : (*a.* Lineage *b.* Progeny *c.* Prototype)

26. Rabbit : Timid :: Lion : (*a.* Fierce *b.* Dangerous *c.* Bold)
27. English : Australia :: Portuguese : (*a.* Brazil *b.* Puerto Rico *c.* Costa Rica)
28. Optic nerve : Sight :: Olfactory nerve : (*a.* Hearing *b.* Smell *c.* Taste)
29. Labor : Wages :: Capital : (*a.* Industry *b.* Stockholder *c.* Interest)
30. Certify : Attest :: Captivate : (*a.* Fascinate *b.* Admire *c.* Castigate)

31. $8\frac{1}{3}$: 100 :: Month : (*a.* Season *b.* Year *c.* Time)
32. Georgians : Russia :: Basques : (*a.* Italy *b.* Switzerland *c.* Spain)
33. 1/3 : 2 :: 10/15 : (*a.* 6 *b.* 5 *c.* 4
34. Vergil : Aeneid :: Matthew : (*a.* Psalms *b.* Mark *c.* Gospel)
35. Tuberculosis : Tubercular :: Dementia : (*a.* Demeanor *b.* Demented *c.* Dement)

36. Nature : Nurture :: Heredity : (*a.* Ancestry *b.* Environment *c.* Health)
37. Pretentious : Pretension :: Decorous : (*a.* Decoration *b.* Decorum *c.* Deceptive)
38. Cube of 2 : Cube of 3 :: 8 : (*a.* 12 *b.* 16 *c.* 27)
39. Proletarian : Worker :: Brahmin : (*a.* Bull *b.* Aristocrat *c.* India)
40. Bacchus : Revelry :: Ceres : (*a.* Agriculture *b.* Love *c.* Hunting)

41. Ontario : Canada :: Yucatan : (*a.* Alaska *b.* Mexico *c.* Guatemala)
42. Entomologist : Insects :: Philologist : (*a.* Philosophy *b.* Logic *c.* Language)
43. 1/8 : 3/16 :: 10 : (*a.* 30 *b.* 15 *c.* 5)
44. Binocular : Telescope :: Bicameral : (*a.* Photography *b.* Legislature *c.* Dromedary)
45. Atone : Expiate :: Elicit : (*a.* Evoke *b.* Illicit *c.* Exploit)

46. Annual : Perennial :: Deciduous : (*a.* Floriferous *b.* Evergreen *c.* Changeable)
47. Harvey : Circulation :: Lister : (*a.* Antisepsis *b.* Vaccination *c.* Anesthesia)
48. 7 : 11 :: 13 : (*a.* 15 *b.* 16 *c.* 19)
49. T. H. Huxley : Darwin :: Adam Smith : (*a.* Emerson *b.* Galton *c.* Malthus)
50. Rung : Ladder :: Column : (*a.* Arch *b.* Coliseum *c.* Colonnade)

51. 5:00 P.M. : London :: 2:00 A.M. (*a.* Tokyo *b.* New York *c.* Athens)
52. Hieroglyphics : Egyptians :: Cuneiform : (*a.* Greeks *b.* Persians *c.* Hebrews)
53. Whence : Whither :: Origin : (*a.* Source *b.* Intention *c.* Destination)
54. J. Dewey : Philosophy :: T. Veblen : (*a.* Economics *b.* Religion *c.* Medicine)
55. Danube : Black Sea :: Euphrates : (*a.* Persian Gulf *b.* Red Sea *c.* Caspian Sea)

56. Hanging Gardens : Babylon :: Colossus : (*a.* Olympia *b.* Rhodes *c.* Ephesus)
57. Gavotte : Dance :: Filigree : (*a.* Horse *b.* Fabric *c.* Ornament)
58. Optics : Physics :: Dialectics : (*a.* Logic *b.* Language *c.* Mathematics)
59. Martin : Swallow :: Martinet : (*a.* Skylark *b.* Metronome *c.* Disciplinarian)
60. Sat : Set :: Rose : (*a.* Raised *b.* Risen *c.* Rise)

61. Notre Dame : Cathedral :: Nostradamus : (*a.* Prophet *b.* Temple *c.* Nostrum)
62. Combustible : Inflammable :: Volatile : (*a.* Voluble *b.* Flighty *c.* Inviolate)
63. Toxicology : Poisons :: Numismatics : (*a.* Coins *b.* Fossils *c.* Guns)
64. Noxious : Injurious :: Salacious : (*a.* Salable *b.* Delicious *c.* Obscene)
65. Octet : Octahedron :: Sextet : (*a.* Cube *b.* Sexton *c.* Polyhedron)

66. Hippocrates : Galen :: Aeschylus : (*a.* Euripides *b.* Pericles *c.* Heraclitus)
67. Syntax : Grammar :: Prosody : (*a.* Versification *b.* Prose *c.* Orthography)
68. Marx : Hegel :: Aquinas : (*a.* Luther *b.* Aristotle *c.* Erasmus)
69. Maoris : New Zealand :: Ainus : (*a.* China *b.* India *c.* Japan)
70. Naive : Sophisticated :: Ingenuous : (*a.* Candid *b.* Artful *c.* Inventive)

71. Parquetry : Wood :: Cloisonné : (*a.* Canvas *b.* Fretwork *c.* Enamel)
72. Peculiar : Distinctive :: Untoward : (*a.* Unfavorable *b.* Unexpected *c.* Fortuitous)
73. Taxonomy : Biology :: Etymology : (*a.* Zoology *b.* Philology *c.* Geology)
74. Utopia : Thomas More :: New Atlantis : (*a.* Mill *b.* Wells *c.* Bacon)
75. Earth : Mars :: Saturn : (*a.* Jupiter *b.* Uranus *c.* Neptune)

APPENDIX E

RATING SHEET FOR STUDENT TEACHER, HOME ECONOMICS
Kansas State University

NAME____________________ SEMESTER_______________ DATE______

SCHOOL______________________________ 9 WEEKS PERIOD

Please rate the student teacher by checking in the column which best describes the item listed.

1. Superior 2. Strong 3. Average 4. Below Average 5. Unsatisfactory

ROUTINE WORK	1	2	3	4	5
Physical conditions					
Use of time, materials, etc.					
General pupil control					
Records - reports					
DAILY PREPARATION					
Knowledge of subject matter					
Methods used					
Organization (general)					
Consistent preparation					
TEACHING PROCEDURE					
Ready at all times					
Creates learning situations					
Questions, their use					
Illustrations, choice and use					
Makes, uses tests effectively					
Teacher-pupil participation					
Attains aims					
Conscious of pupil difference					

PERSONAL	1	2	3	4	5
Personal appearance					
Broad interests					
Physically fit					
Personality					
Voice					
Self-control - poise					
Use of English					
Understanding of pupils					
Adapts to situations					
PROFESSIONAL					
Loyal, cooperative					
Dependable					
Punctual					
Enthusiastic, forceful					
Courteous, tactful					
Moral, social standards					
Professional standards					
Self-evaluation					
Enthusiastic for the profession					
GENERAL					
Accepts criticisms					
Shows improvement					
Prediction of success					

COMMENTS:

RATED BY____________________
Supervising Teacher

APPENDIX F

Form C

EVALUATION OF STUDENT TEACHING*

DIRECTIONS

This evaluation record is intended to be used by student teacher and supervising teacher together to indicate nature of performance in student teaching. Evaluate once during second, third, fourth, and fifth weeks, using different colored pencils. Decide which whole number (1 to 5) best describes the characteristics of the student teacher. Place the number in the right hand column. Total for each area. Record totals under summary below. If you wish to make additional comments, space has been allowed below each item for this purpose.

SUMMARY

Personal Qualities ____________

Class Procedure ____________

Professional Attitude ____________

Classroom Management ____________

Extra Activities ____________

Pupil Relations ____________

Total Score ____________

Total Possible Score 150 ______

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*Adapted from Report of Workshop for Supervising Teachers, Home Economics Department, University of Vermont, Burlington, Vermont. Issued by Vermont State Board for Vocational Education, Montpelier, Vermont.

EVALUATION OF STUDENT TEACHING

	1	2	3	4	5	Score
PERSONAL QUALITIES						
Appearance	Poorly groomed, clothes unbecoming or inappropriate, poor posture, untidy hair		Reasonably well groomed, clothes becoming and appropriate, fairly good posture, hair fairly neat		Immaculate, clothes show good taste, very good posture, impresses people favorably	____
Voice	Disagreeable or difficult to hear or to understand		Fairly pleasing, generally distinct and loud enough to be heard		Pleasing, distinct, loud enough to be heard	
Use of English	Very limited vocabulary, makes frequent errors in grammar or expresses ideas poorly, frequent errors in spelling		Average vocabulary, makes errors in grammar, expresses ideas fairly well, spells fairly well		Extensive vocabulary, conveys ideas clearly and effectively, with no grammatical or spelling errors	____
Judgment	Indecisive, disregards important facts, or makes snap judgments, lacks sense of values		Usually satisfied with own decisions but may be unable to justify them, sometimes fails to weigh values		Reaches satisfactory decisions, can support them with sound arguments	____
Independence	Demands much help and attention		Goes ahead with little help on work already planned but has difficulty in originating plans		Self-confident and works out many problems alone or with slight assistance, has courage of convictions	____
Poise	Ill at ease and lacks self-control, may have nervous mannerisms		Usually at ease although upset by unexpected situations		Apparently at ease and self-possessed even in trying situations	____
			Total possible points 30		Total	____

	1	2	3	4	5	Score
CLASS PROCEDURE						
Lesson Planning	Fails to plan lessons, has difficulty in planning effectively, lacks knowledge of time element		Lessons planned fairly well, sometimes too little planned for class period		Definite objectives for each lesson well planned and carried out	
Questioning	No thought questions, student questions disregarded, poorly worded		Good balance of thought and fact questions, fairly well worded and presented		Excellent thought questions, well worded, included participation of class, consideration given to student questions	
Discussion	Discussions lack in purpose and direction, important facts passed over or disregarded, continually calls on same class members to respond		Shows some skill in leading discussions, usually able to capitalize an important point brought up in discussion, obtains participation from majority of class members		Shows increasing skill in leading discussions, able to summarize and relate class contributions to important facts to be emphasized, encourages participation of each class member	
Directions	Poorly given, resulting in confusion, not purposeful		Clearly given but not always thought through to completion		Clear and definite, purposeful	
Knowledge of Subject Matter	Weak in subject matter, states incorrect facts, unable to answer questions accurately		Usually sure of subject matter, able to handle situations when facts are known		Clear knowledge of subject matter, accurate	

	1	2	3	4	5	Score
Assignments	Not purposeful, given too hurriedly with little thought		Usually purposeful and adequately given, fairly alert to problems of pupils to be used in assignments		Clearly and definitely given, definite purpose evident and grows out of pupils' discussion	____
Motivation	No thought given to motivation, lacking in personal enthusiasm		Usually provided and well chosen, shows animation at times		Always plans for some form of motivation for each lesson, animated and cheerful	____
Use of Illustrative Material	None used or old and impractical		Pictures used, chalkboard, some creative and self-made material		Creative material used, plentiful, well chosen, and applicable	____
Ability to Use Equipment	Not conscious of place of equipment, lacks knowledge of how to use it		Can use most equipment to good advantage, a bit uncertain of some types		Has ability to make use of equipment, alert to constant use	____
Standards of Work	Poor, inaccurate, shows little improvement		Attains average results, shows a moderate degree of improvement		Maintains standards required in situations, shows consistent improvement	____
Creativity	Presentation of subject matter tends to be monotonous, routine and uninteresting, few original ideas		Shows some creativity in presentation of subject matter, uses new approaches and original ideas from time to time		Very creative in organization and presentation of subject matter, uses a variety of teaching techniques, methods, and aids	____
			Total possible points 55		Total	____

	1	2	3	4	5	Score
PROFESSIONAL ATTITUDES						
Standards Set by Teaching	Violates principles taught, does not put into practice things taught, poor standards set		Usually sets good standards, for the most part carried out in teaching		Good standards set and maintained	
Attitude Toward Criticism	Resents suggestions or is discouraged by criticism		Accepts advice but not always able to utilize suggestions well		Invites constructive criticism, utilizes intelligently	
Professional Development	Indifferent toward professional matters and opportunities		Shows moderate interest in profession, not much follow-up work done		Makes the most of professional opportunities, maintains high ethical standards	
			Total possible points 15		Total	
CLASSROOM MANAGEMENT						
Routine Duties	Careless about keeping records and recording marks, absences, etc., disorder evident		Some system evident, not always consistent in carrying out		Systematic in recording necessary material, duties done regularly and in efficient manner	
Economy of Time	Overemphasizes detail or ignores them, work not completed on time, time wasted		Usually organizes details of work in relation to whole problem, work generally completed on time, occasionally time wasted		Gets things done efficiently and on time, no time wasted	

	1	2	3	4	5	Score
Care of Classroom	Oblivious to routine care and upkeep of the department, supplies left out, pupils unaware of housekeeping duties or resentful of them		Usually assists in care and upkeep of the department, occasionally careless in caring for supplies and equipment, enlists cooperation of pupils in routine housekeeping		Takes increasing responsibility in caring for supplies and equipment, able to develop in pupils interest and ability to keep classroom neat and orderly	
Pupil Behavior	Unable to control pupils, classes disorderly and noisy, often difficult problems		Fair control, occasional slight disciplining		Good control, respect of pupils evident	
			Total possible points 20		Total	
EXTRA ACTIVITIES						
Contributions to Total School Program	No contributions made outside own department		Willing when called upon, attends teachers' meetings, etc.		Volunteers help and suggestions, correlates own subject matter field with other subjects	
Participation in Community	Very limited, little if any participation		Concerned with limited number of interests, participates in one or two social activities		Participates and interested in several social activities, attends school functions, lectures, plays, concerts; has hobbies	
			Total possible points 10		Total	

	1	2	3	4	5	Score
PUPIL RELATIONS						
Pupil-Teacher	Pupils dislike teacher, disrespectful, teacher unaware of method for dealing with problem		Good friendly attitude in classroom		Pupils have great respect for teacher, come to her for other problems	
Individual Differences	Unaware of differences, all students treated alike		Aware of individual problems		Recognizes and provides for individual differences	
Class Participation	Lack of participation discussion		Fair participation, respond when called upon		Good participation, respond well and voluntarily	
Pupil Attitude Toward Work	Uninterested in work		Interested in some phases of work		Keen interest and enthusiasm, feel worthwhileness	
			Total possible points 20		Total	

AN EXPLORATORY STUDY TO IDENTIFY CONCEPTS AND DETERMINE CONCEPT ATTAINMENT IN A HOME ECONOMICS EDUCATION COURSE

by

MAXINE LOVELL HUNZIGER

B. S., Northwest Missouri State College, 1959

AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

School of Education

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1964

The "concept approach" to learning has been recognized as a way of identifying, organizing, structuring, and unifying significant subject matter content or major ideas in a field. When students and teachers identify and understand significant ideas in a body of knowledge, ability to apply principles, to build or develop depth and breadth, and to use knowledge effectively is made possible.

The purposes in this study were (1) to identify basic concepts for a beginning course in home economics education and (2) to assess students' awareness of and ability to use basic concepts and related generalizations during and immediately following the student teaching experience.

The investigator identified the major concepts of the Methods of Teaching Home Economics course through observations in the class. Student teachers' attainment of concepts and related generalizations was evaluated with a paper and pencil test, observation of students in the student teaching experience, and in assignments completed by students.

The major concepts identified in the Methods of Teaching Home Economics course appeared to be attained by students in decreasing order as follows: (1) Effective and meaningful planning helps the teacher as she guides pupils toward learning objectives; (2) Student teaching provides an opportunity for the student teacher to begin to assume the role and responsibilities of a classroom teacher; (3) Programs of learning are planned to meet needs of specific groups of pupils having a variety of individual differences; and (4) A variety of means may be used to evaluate pupil learnings effectively.

It was recommended that teachers of methods courses in home economics and secondary teachers of home economics might identify basic concepts and make concept attainment a desired goal of learning.

Increased opportunity to guide supervising teachers in their roles in the student teaching experience would probably increase their proficiency as directors of learning.

The professional education curriculum might be arranged to include further learnings in measurement and evaluation. Students and teachers who are encouraged to continue their education would be likely to utilize self-evaluation effectively, be exposed to trends and new developments in subject matter and teaching techniques, and new knowledge relating to the learning process.

Further research in means of evaluation of concept attainment and refining of instruments to measure concept attainment appears to be desirable.